City of Torrington

ENGINEERING DEPARTMENT
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ADDENDUM No. 1

DATE ISSUED: June 7, 2019

RE: NAUGATUCK RIVER GREENWAY MULTI-USE TRAIL

BID # NRG-027-061219

All bidders are hereby advised of the following amendments to the Contract Bid Documents, which are hereby made an integral part of the specifications for the subject project, prepared by The City of Torrington, to the same extent as all other documents. All work shall conform to the standards and provisions of same.

Bids submitted shall be deemed to include the Contract Document information as shown in Addendum No. 1. General bidders shall notify sub-bidders that may be affected by this addendum as applicable. Bidders shall be required to acknowledge receipt of this Addendum in the space provided on the Bid Proposal Form, Page BP-1. Failure to acknowledge this Addendum by the Bidder may result in the rejection of their bid. Bidders are directed to review changes to all portions of the work as changes to one portion may affect the work of another.

1. **See attached Addendum #1 created by Anchor Engineering (50 pages).**

END OF ADDENDUM No. 1

NAUGATUCK RIVER GREENWAY – MULTI USE TRAIL
ADDENDUM NO. 1
June 7, 2019

TO ALL BIDDERS:

All bidders are hereby advised of the following amendments to the Contract Bid Documents, which are hereby made an integral part of the specifications for the subject project, prepared by The City of Torrington, to the same extent as all other documents. All work shall conform to the standards and provisions of same.

Bids submitted shall be deemed to include the Contract Document information as shown in Addendum No. 1. General bidders shall notify sub-bidders that may be affected by this addendum as applicable. Bidders shall be required to acknowledge receipt of this Addendum in the space provided on the Bid Proposal Form, Page BP-1. Failure to acknowledge this Addendum by the Bidder may result in the rejection of their bid. Bidders are directed to review changes to all portions of the work as changes to one portion may affect the work of another.

The following items form this addendum:

1. **Replace entire plan set with attached plans; Sheets 1 of 9 through 9 of 9, revised 06/07/19.**

2. **Replace entire Bid Form with attached Bid Form; pages BF 1 of 7 thru BF 7 of 7 revised for Addendum #1.**

3. **Replace the entire sections of the following Special Provisions;**
    a. **List of Special Provisions**
    b. **2.02 - Site Demolition and Removals**
    c. **3.04 - Processed Aggregate Base**
    d. **4.06 - Bituminous Concrete**
    e. **5.03 - Concrete Sidewalk Extension of Bridge**
    f. **5.86 - Storm Drainage**
    g. **7.28 - Stone Dust Multi-Use Trail**
    h. **9.21 - Concrete Observation Platform**
    i. **9.80 - Construction Staking**
    j. **9.99 - Existing Building Removal**

END OF ADDENDUM No. 1

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
0201001A	Clearing and Grubbing for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0202510A	Site Demolition and Removals for the price per **Square Foot** of	6,200		
	_____ Dollars _____ Cents		$	$
0213100	Granular Fill for the price per **Cubic Yard** of	120		
	_____ Dollars _____ Cents		$	$
0304003A	Processed Aggregate Base- Furnished & Delivered by Others for the price per **Cubic Yard** of	600		
	_____ Dollars _____ Cents		$	$
0406171A	HMA S0.5 (Road and Parking Areas) for the price per **Ton** of	55		
	_____ Dollars _____ Cents		$	$

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
0406172A	HMA S0.375 (Multi-use Trail) for the price per **Ton** of	300		
	_____ Dollars _____ Cents		$	$
0503007A	Concrete Sidewalk Extension on Bridge for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0586060A	Special Type II Catch Basin with Single Type "C" Top for the price per **Each** of	1		
	_____ Dollars _____ Cents		$	$
0586600A	Reset Type "CL" Catch Basin Top for the price per **Each** of	1		
	_____ Dollars _____ Cents		$	$
0728050A	Stone Dust Multi-Use Trail (2" Stonedust) for the price per **Square Feet** of	10,000		
	_____ Dollars _____ Cents		$	$

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
0811001	Concrete Curbing for the price per **Linear Foot** of	425		
	_____ Dollars _____ Cents		$	$
0815001	Bituminous Concrete Lip Curbing for the price per **Linear Foot** of	100		
	_____ Dollars _____ Cents		$	$
0905025	4' High Stockade Fence and Gate for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0910095	Timber Guiderail for the price per **Linear Foot** of	400		
	_____ Dollars _____ Cents		$	$
0910096	Timber Post (10" x 10") for the price per **Each** of	43		
	_____ Dollars _____ Cents		$	$

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
0913003	4' High Black Vinyl Coated Chain Link Fence for the price per **Linear Foot** of	210		
	_____ Dollars _____ Cents		$	$
0914000	Galvanized Pipe Railing for the price per **Linear Foot** of	102		
	_____ Dollars _____ Cents		$	$
0921005A	Concrete Sidewalk Ramp for the price per **Each** of	1		
	_____ Dollars _____ Cents		$	$
0921040A	Concrete Observation Platform for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0950005A	Turf Establishment for the price per **Square Yard** of	80		
	_____ Dollars _____ Cents		$	$

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
0970007A	Trafficperson (Uniformed Flagger) for the price per **Hour** of	160		
	_____ Dollars _____ Cents		$	$
0971001A	Maintenance and Protection of Traffic for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0975001A	Mobilization & Demobilization for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
0999005A	Existing Building Removal for the price per **Lump Sum** of	1		
	_____ Dollars _____ Cents		$	$
1209124A	Hot Applied Painted Pavement Markings 4" (White) for the price per **Linear Foot** of	550		
	_____ Dollars _____ Cents		$	$

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
1403052A	Adjust Existing MH Frame & Cover <4" for the price per **Each** of	3		

_____ Dollars $ $

_____ Cents

TOTAL BASE BID AMOUNT $

BID FORM
NAUGATUCK RIVER GREENWAY
MULTI-USE TRAIL
TORRINGTON, CT

ITEM NO#	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT

BID ALTERNATES

ITEM NO. 1 — **UNIT** — **ADJUSTMENT PRICE PER UNIT**

The base bid is structured for the City to furnish reclaimed materials for all base materials required on the job. Bid Alternate No. 1 is for the contractor to furnish Item # 0304002A Processed Aggregate Base (FOB) to the job site in place of the City supplied material.

600 C.Y.

$ _____
(in numbers)

ITEM NO. 2 — **UNIT** — **ADJUSTMENT PRICE PER UNIT**

Item No. 2 is an Add Alternate to the project for the contractor to remove the existing utility pole depicted on Sheet 1 of 9 at the Torrington senior center and abandon the existing overhead electrical service from the pole to the senior center distribution panel. The contractor will be responsible for this work if Eversource doesn't perform it.

1 LS

$ _____
(in numbers)

UNIT ADJUSTMENTS

Owner may order additions, deletions or revisions to the Work. If such increase or decreases to the Work occur, the prices shown below (for items complete, in-place and ready for service) will be used to adjust the Contract Price by Change Order:

ITEM	UNIT	ADJUSTMENT PRICE PER UNIT
1. Furnishing Topsoil (see Section 9.50 Turf Establishment)	C.Y.	$ _____ *(in numbers)*
2. Processed Aggregate Base (furnished and placed) (See Section 3.04)	C.Y.	$ _____ *(in numbers)*

LIST OF SPECIAL PROVISIONS

SECTION 1.01 - REFERENCES
SECTION 1.02 – SUBSURFACE DATA
SECTION 1.04 – SCOPE OF WORK
SECTION 1.05 – CONTROL OF THE WORK
SECTION 1.06 – STORAGE AND PROTECTION
SECTION 1.08 - PROSECUTION AND PROGRESS
SECTION 2.01 – CLEARING AND GRUBBING
*SECTION 2.02 – SITE DEMOLITION AND REMOVALS
SECTION 2.10 – EROSION CONTROLS
*SECTION 3.04 – PROCESSED AGGREGATE BASE
*SECTION 4.06 – BITUMINOUS CONCRETE
*SECTION 5.03 – CONCRETE SIDEWALK EXTENSION ON BRIDGE
*SECTION 5.86 – STORM DRAINAGE
*SECTION 7.28 – STONE DUST MULTI-USE TRAIL
*SECTION 9.21 – CONCRETE OBSERVATION PLATFORM
SECTION 9.50 – TURF ESTABLISHMENT
SECTION 9.71 – MAINTENANCE AND PROTECTION OF TRAFFIC
SECTION 9.75 – MOBILIZATION AND DEMOBILIZATION
*SECTION 9.80 – CONSTRUCTION STAKING
*SECTION 9.99 – EXISTING BUILDING REMOVAL
SECTION 12.09 – HOT APPLIED MARKINGS, SYMBOLS & LEGENDS
SECTION 14.03 – MANHOLE FRAME & COVER
SECTION M.04 – BITUMINOUS CONCRETE MATERIALS
SECTION M.06 – METALS

*REVISED WITH ADDENDUM #1

ADDENDUM #1

SECTION 2.02
SITE DEMOLITION AND REMOVALS

ITEM 0202510A - SITE DEMOLITION AND REMOVALS

PART 1 - GENERAL

1.01 CONTRACT DOCUMENTS

The general provisions of the CONTRACT, including General and Supplementary Conditions and General Requirements, apply to the work specified in this subsection.

1.02 DESCRIPTION

A. This item is intended to provide compensation for the removal of existing curbs, sidewalks and driveways.

B. Demolition includes, but is not limited to, removal of existing curbs, sidewalk, driveways and pavements. Demolition also includes removal and disposal of, trash, debris, and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated. Demolition materials and debris shall be removed from the Project Area and legally disposed of in accordance with applicable Federal, State and Local codes and regulations.

C. Work includes all saw cutting of pavements and sidewalks and removal of existing materials to proposed subgrade elevations.

D. The Contractor shall visit the site and verify the location of all pertinent items prior to submitting a bid so that the difficulties associated with execution of the contract are fully understood. No additional compensation will be allowed for failure to be so informed. No claims whatsoever shall be considered for encountering structural abnormalities, or abandoned utilities or structures.

PART 2 – PRODUCTS N/A

PART 3 - METHOD OF CONSTRUCTION

3.01 SITE VISIT

The Contractor shall visit the site and verify the location of all pertinent items prior to submitting a bid so that the difficulties associated with execution of the contract are fully understood. No additional compensation will be allowed for failure to be so informed. No claims whatsoever shall be considered for encountering structural abnormalities, or abandoned utilities or structures.

3.02 UTILITIES

A. It shall be the Contractor's responsibility to determine the actual location of all utilities. The Contractor shall promptly repair or have repaired by applicable utility company any damage incurred to utilities during construction work at no cost to City or the utility company. The Contractor shall maintain existing utilities to remain in service to adjacent buildings.

B. The Contractor shall not interrupt existing utilities serving adjacent buildings, except when authorized in writing by authorities having jurisdiction or ownership. Any temporary interruption necessary shall be directly coordinated and supervised by utility company personnel. Upon receiving such authorization, the Contractor shall provide and maintain temporary services during interruptions of existing utilities, as acceptable to utility company, governing authorities and the building owner.

3.03 PROTECTION AND SAFETY

A. Protection and safety of the surrounding community and property shall take the highest priority during demolition operations. The City of Torrington is not responsible for safety measures employed during demolition or construction. The City of Torrington has no contractual duty to control the safest methods or means of the work, job site responsibilities, supervision or to supervise safety and does not voluntarily assume any such duty or responsibility.

B. All construction operations shall be conducted so as to prevent damage to adjacent buildings, structures and other facilities and injury to persons. Special care and attention shall be taken by Contractor when working directly along the adjacent buildings. Existing building foundations are old and impacts may cause damage. Contractor shall repair or replace any damage caused by demolition or construction activities at his own expense.

C. The Contractor shall make a careful examination of the materials to be demolished and of the adjoining property and utilities which are to remain and take whatever precautions are necessary to carry on operations so as to prevent any settlement, collapse, damage or other impacts to adjacent buildings, structures, stoops, utilities and other existing features. During all operations, the Contractor is responsible for the structural integrity of these structures and surrounding structures relative to any problems or damages resulting from the performance of the Contractor's work. The Contractor shall notify the City immediately if the safety of an adjacent structure or facility is endangered or if any movement has occurred. The Contractor must provide interior and exterior shoring, bracing or support to prevent movement or settlement of the adjacent structures when safety concerns warrant. Any damage inflicted upon adjacent property, construction or utilities by the Contractor's work must be corrected promptly by the Contractor at no cost to the City. Contractor shall include in his demolition bid all costs associated with the additional time and additional precautionary measures that are needed in the areas where abutting walls. Work may include saw cutting existing pavement adjacent to walls so smaller pieces of pavements can be removed without damage to the walls.

D. All work adjacent to occupied buildings which may produce fire hazards or create nuisances or safety and health hazards from noise, vibration, gases, vapors, fumes, dust mists, or odors shall not be performed unless preventive controls or measures are implemented. Special attention is brought to adjacent building fresh air intakes, air conditioning units, etc. which need protection from dust during demolition.

3.04 OCCUPANCY AND ADJACENT PROPERTIES

The adjacent buildings shall maintain their present occupancy and function. (Any vacant units that become occupied during the project time shall be included). The Contractor shall take any and all measures necessary to protect persons associated with these properties from harm and damage during demolition activities, as well as maintaining emergency vehicle and pedestrian traffic around the demolition area. Fire, ambulance and police access shall be maintained. The Contractor shall conduct demolition operations and removal of debris in a manner that ensures the least interference with the roadway, pedestrian walkways, parking and other adjacent occupied facilities.

3.05 SAWCUTTING

Sawing existing pavement at sidewalks/driveways/streets/structures is required in order to produce a clean vertical and neat edge without damage to the remaining pavement. Also, saw cutting concrete sidewalks is required in order to produce a clean and neat edge where new sidewalk ends/begins with existing sidewalks to remain. Any additional patching required outside the trench area caused by the contractor's work shall be repaired at the Contractors expense. Where voids are created by removal of utilities and hardscape item, the Contractor shall import backfill material. Imported fill material shall be in accordance with City of Torrington backfill specification as shown in City standard trench details and compacted accordingly to details. Excessive groundwater issues shall be eliminated as part of this work.

3.06 MATCHING INTO EXISTING PAVEMENT

"Further removal of existing driveway area beyond the limits shown on the design plans may be required after final grading and base roadway paving has been completed to achieve positive drainage and to maintain minimum and

maximum driveway grades. This work, regardless of the area amount will include all labor, equipment and saw cutting and will be measured for and pau for at the contract unit price."

PART 4--METHOD OF MEASUREMENT

The removal of existing materials as described herein shall be measured for payment in square feet regardless of depth. Payment lines shall coincide with the lines shown on the plans and shall be field measured prior to excavation operations.

PART 5--BASIS OF PAYMENT

Work for all removals shall be paid for at the contract unit price per square foot for "Site Demolition and Removals". This price shall include removal of all existing curbs, sidewalk, driveways and pavements regardless of depth or thickness within the project limits as shown on the contract drawings. Demolition also includes removal and disposal of, trash, debris, and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated

This price shall also include rough grading, excavation, handling, transportation and disposal of excavated materials and all materials, equipment, tools, and labor incidental to the work described above.

ITEM	**UNIT**
SITE DEMOLITION AND REMOVALS	**S.F.**

END OF SECTION

SECTION 3.04
PROCESSED AGGREGATE BASE

ITEM #0304002A PROCESSED AGGREGATE BASE
ITEM #0304003A PROCESSED AGGREGATE BASE – FURNISHED & DELIVERED BY OTHERS

PART 1 - GENERAL

1.01 DESCRIPTION

The base shall consist of a foundation constructed on the prepared sub base or sub grade in accordance with these Special Provisions/Technical Specifications and in conformity with the lines, grades, and compacted thickness as shown on the Construction Details.

PART 2 - MATERIALS

2.01 All materials for this work shall conform to the requirements of CDOT Form 817 Standard Specifications, Sections M.05.01-1, M.05.01-2 and M.05.01-3.

The materials for Item #0304003A is a reclaimed bituminous base material to be supplied by the City of Torrington.

PART 3 - CONSTRUCTION METHODS

3.01 Coarse aggregate shall be either gravel, broken stone or reclaimed miscellaneous aggregate, the latter containing no more than 2 percent by weight of asphalt cement, at the option of the Contractor. However, only one type of coarse aggregate shall be used on the Project unless otherwise permitted by the Engineer.

Prior to placing the processed aggregate base, the Contractor shall prepare the subbase or subgrade true to line and grade in accordance with Section 02090.

The processed aggregate base shall be spread uniformly by a method acceptable to the Engineer. The thickness of each course shall not be more than 4 inches after compaction.

After the aggregate is spread, it shall be thoroughly compacted and bound by use of equipment specifically manufactured for that purpose. Water may be used during the compaction and binding operation.

The compacting and binding operation shall begin at the outside edges, overlapping the shoulders for a distance of not less than 6 inches and progress towards the middle, parallel with the centerline of the pavement. The work shall cover the entire surface of the course with uniform overlapping of each preceding track or pass. Areas of super-elevation and special cross slope shall be compacted by beginning at the lowest edge and proceeding towards the higher edge, unless otherwise directed by the Engineer. The compacting and binding operation shall be continued until the voids in the aggregates have been reduced to provide a firm and uniform surface satisfactory to the Engineer.

All aggregate shall be completely compacted and bound at the end of each day's work.

The thickness shall be as indicated on the construction details, or as ordered by the Engineer and within a tolerance of plus or minus one-half inch (1/2"). Measurements to determine the thickness will be taken by the Engineer and shall be considered representative.

If a thickness measurement is taken and found deficient, the Engineer will take such additional measurements, as he considers necessary to determine the longitudinal limits of the deficiency. Areas not within allowable tolerances shall be corrected, as ordered by the Engineer.

The dry density of each layer of processed aggregate base after compaction shall not be less than 95 percent of the dry density for that material when tested in accordance with AASHTO T180, Method D. If a layer is formed from reclaimed miscellaneous aggregate containing bituminous concrete, the wet density after compaction on this layer shall not be less than 95 percent of the wet density for that processed aggregate when tested in accordance with AASHTO T180, Method D.

Should the subbase or subgrade material become churned up or mixed with the processed aggregate base, the Contractor shall remove the mixture and repair the area in a manner acceptable to the Engineer.

Any surface irregularities or segregation which develops shall be corrected by loosening material already in place and removing or adding aggregate as required, after which the effected area, including the surrounding surface, shall be compacted and bound until it is brought to a firm and uniform surface satisfactory to the Engineer.

PART 4 – MEASUREMENT

4.01 Measurement for processed aggregate base will be made by the actual number of cubic yards in place after final grading and compaction.

Measurement will be made by multiplying the design width and length by the average depth. The depth will be determined in the field during installation by averaging random depth measurement locations at 20’ intervals or as required at changes in depth of the material.

PART 5 – PAYMENT

5.01 Payment for “Processed Aggregate Base” will be made for at the Contract unit price per cubic yard, complete in place, which price shall include furnishing material, all equipment, material trucking, tools, supervision, labor incidental thereto. There will be no separate cost for the formation of subgrade, as the cost of this work is included in this item.

Payment for “Processed Aggregate Base – Furnished & Delivered by Others” will be made for at the Contract unit price per cubic yard, complete in place, which price shall include, all equipment, tools, supervision, labor incidental thereto. There will be no separate cost for the formation of subgrade, as the cost of this work is included in this item.

ITEM	**UNIT**
#0304002A PROCESSED AGGREGATE BASE	**C.Y.**
#0304003A PROCESSED AGGREGATE BASE – FURNISHED & DELIVERED BY OTHERS	**C.Y.**

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END OF SECTION

SECTION 4.06 BITUMINOUS CONCRETE

4.06.01—Description: Work under this section shall include the production, delivery and placement of a non-segregated, smooth and dense bituminous concrete mixture brought to proper grade and cross section. This section shall also include the method and construction of longitudinal joints. The terms listed below as used in this specification are defined as:

Bituminous Concrete: A concrete material that uses a bituminous material (typically asphalt) as the binding agent and stone and sand as the principal aggregate components. Bituminous concrete may also contain any of a number of additives engineered to modify specific properties and/or behavior of the concrete material. For the purposes of this Specification, references to bituminous concrete apply to all of its sub-categories, for instance those defined on the basis of production and placement temperatures, such as hot-mix asphalt (HMA) or warm-mix asphalt (WMA), or those defined on the basis of composition, such as those containing polymer-modified asphalt (PMA).

Course: A lift or multiple lifts comprised of the same bituminous concrete mixture placed as part of the pavement structure.

Density Lot: All material placed in a single lift and as defined in Article 4.06.03.

Disintegration: Wearing away or fragmentation of the pavement. Disintegration will be evident in the following forms: Polishing, weathering-oxidizing, scaling, spalling, raveling, potholes or loss of material.

Dispute Resolution: A procedure used to resolve conflicts resulting from discrepancies between the Engineer and the Contractor's density results that may affect payment.

Hot Mix Asphalt (HMA): A bituminous concrete mixture typically produced at 325°F.

Lift: An application of a bituminous concrete mixture placed and compacted to a specified thickness in a single paver pass.

Polymer Modified Asphalt (PMA): A bituminous concrete mixture containing a polymer modified asphalt binder in accordance with contract specifications. All PMA mixtures shall incorporate a qualified warm mix technology.

Production Lot: All material placed during a continuous daily paving operation.

Quality Assurance (QA): All those planned and systematic actions necessary to provide confidence that a product or facility will perform as designed.

Quality Control (QC): The sum total of activities performed by the vendor (Producer, Manufacturer, and Contractor) to ensure that a product meets contract specification requirements.

Superpave: A bituminous concrete mix design used in mixtures designated as "S*" Where "S" indicates Superpave and * indicates the sieve related to the nominal maximum aggregate size of the mix.

Segregation: A non-uniform distribution of a bituminous concrete mixture in terms of gradation, temperature, or volumetric properties.

Warm Mix Asphalt (WMA): A bituminous concrete mixture that can be produced and placed at reduced temperatures than HMA using a qualified additive or technology.

4.06.02-Materials: All materials shall conform to the requirements of Section M.04.

1. Materials Supply: The bituminous concrete mixture must be from one source of supply and originate from one Plant unless authorized by the Engineer. Bituminous Concrete plant QCP requirements are defined in Section M.04.

2. Recycled Materials: Reclaimed Asphalt Pavement (RAP), Crushed Recycled Container Glass (CRCG), Recycled Asphalt Shingles (RAS), or crumb rubber (CR) from recycled tires may be incorporated in bituminous concrete mixtures in accordance with Section M.04 and Project Specifications. CRCG and RAS shall not be used in the surface course.

4.06.03—Construction Methods:

1. Material Documentation: All vendors producing bituminous concrete must have their truck-weighing scales, storage scales, and mixing plant automated to provide a detailed ticket.

Delivery tickets shall include the following information:

a. State of Connecticut printed on ticket.
b. Name of producer, identification of plant, and specific storage bin (silo) if used.
c. Date and time of day.
d. Mixture Designation; Mix type and level Curb mixtures for machine-placed curbing must state "curb mix only".
e. If RAP is used, the plant printouts shall include the RAP dry weight, percentage and daily moisture content.
f. If RAS is used, the plant printouts shall include the RAS dry weight and percentage daily moisture content.
g. The delivery ticket for all mixes produced with Warm Mix Technology must indicate the additive name, and the injection rate (water or additive) incorporated at the HMA plant. The delivery ticket for all mixes produced with pre-blended WMA additive must indicate the name of the WMA Technology.
h. Net weight of mixture loaded into truck (When RAP and/or RAS is used the moisture content shall be excluded from mixture net weight).
i. Gross weight (Either equal to the net weight plus the tare weight or the loaded scale weight).
j. Tare weight of truck – Daily scale weight.
k. Project number, purchase order number, name of Contractor (if Contractor other than Producer).
l. Truck number for specific identification of truck.
m. Individual aggregate, Recycled Materials, and virgin asphalt high/target/low weights. For drum plants and silo loadings, the plant printouts shall be produced at 5 minute intervals maintained by the vendor for a period of three years after the completion of the project.
n. For every mixture designation the running daily total delivered and sequential load number.

The net weight of mixture loaded into the truck must be equal to the cumulative measured weight of its components.

The Contractor must notify the Engineer immediately if, during the production day, there is a malfunction of the weighing or recording system in the automated plant or truck-weighing scales. Manually written tickets containing all required information will be allowed for one hour, but for no longer, provided that each load is weighed on city-approved scales. At the Engineer's sole discretion, trucks may be approved to leave the plant if a city inspector is present to monitor weighing. If such a malfunction is not fixed within forty-eight hours, mixture will not be approved to leave the plant until the system is fixed to the Engineer's satisfaction. No damages will be considered should the city be unable to provide an inspector at the plant.

The city reserves the right to have an inspector present to monitor batching and /or weighing operations.

2. Transportation of Mixture: Trucks with loads of bituminous concrete being delivered to city projects must not exceed the statutory or permitted load limits referred to as gross vehicle weight (GVW). The Contractor shall furnish a list of all vehicles and allowable weights transporting mixture.

The city reserves the right to check the gross and tare weight of any delivery truck. A variation of 0.4 percent or less in the gross or tare weight shown on the delivery ticket and the certified scale weight shall be considered evidence that the weight shown on the delivery ticket is correct. If the gross or tare weight varies from that shown on the

delivery ticket by more than 0.4 percent, the Engineer will recalculate the net weight. The Contractor shall take action to correct discrepancy to the satisfaction of the Engineer.

If a truck delivers mixture to the project and the ticket indicates that the truck is overweight, the load will not be rejected but a "Measured Weight Adjustment" will be taken in accordance with Article 4.06.04.

The mixture shall be transported from the mixing plant in trucks that have previously been cleaned of all foreign material and that have no gaps through which mixture might inadvertently escape. The Contractor shall take care in loading trucks uniformly so that segregation is minimized. Loaded trucks shall be tightly covered with waterproof covers acceptable to the Engineer. Mesh covers are prohibited. The front and rear of the cover must be fastened to minimize air infiltration. The Contractor shall assure that all trucks are in conformance with this specification. Trucks found not to be in conformance shall not be allowed to be loaded until re-inspected to the satisfaction of the Engineer.

Truck body coating and cleaning agents must not have a deleterious effect on the transported mixture. The use of solvents or fuel oil, in any concentration, is strictly prohibited for the coating of the inside of truck bodies. When acceptable coating or agents are applied, truck bodies shall be raised immediately prior to loading to remove any excess agent in an environmentally acceptable manner.

3. Paving Equipment: The Contractor shall have the necessary paving and compaction equipment at the project site to perform the work. All equipment shall be in good working order and any equipment that is worn, defective or inadequate for performance of the work shall be repaired or replaced by the Contractor to the satisfaction of the Engineer. During the paving operation, the use of solvents or fuel oil, in any concentration, is strictly prohibited as a release agent or cleaner on any paving equipment (i.e., rollers, pavers, transfer devices, etc.).

Refueling of equipment is prohibited in any location on the paving project where fuel might come in contact with bituminous concrete mixtures already placed or to be placed. Solvents for use in cleaning mechanical equipment or hand tools shall be stored clear of areas paved or to be paved. Before any such equipment and tools are cleaned, they shall be moved off the paved or to be paved area; and they shall not be returned for use until after they have been allowed to dry.

Pavers: Each paver shall have a receiving hopper with sufficient capacity to provide for a uniform spreading operation and a distribution system that places the mix uniformly, without segregation. The paver shall be equipped with and use a vibratory screed system with heaters or burners. The screed system shall be capable of producing a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screed units as part of the system shall have auger extensions and tunnel extenders as necessary. Automatic screed controls for grade and slope shall be used at all times unless otherwise authorized by the Engineer. The controls shall automatically adjust the screed to compensate for irregularities in the preceding course or existing base. The controls shall maintain the proper transverse slope and be readily adjustable, and shall operate from a fixed or moving reference such as a grade wire or floating beam.

Rollers: All rollers shall be self-propelled and designed for compaction of bituminous concrete. Rollers types shall include steel-wheeled, pneumatic or a combination thereof and may be capable of operating in a static or dynamic mode. Rollers that operate in a dynamic mode shall have drums that use a vibratory or oscillatory system or combination of. The vibratory system achieves compaction through vertical amplitude forces. Rollers with this system shall be equipped with indicators that provide the operator with amplitude, frequency and speed settings/readouts to measure the impacts per foot during the compaction process. The oscillatory system achieves compaction through horizontal shear forces. Rollers with this system shall be equipped with frequency indicators. Rollers can operate in the dynamic mode using the oscillatory system on concrete structures such as bridges and catch basins if at the lowest frequency setting.

Pneumatic tire rollers shall be self-propelled and equipped with wide-tread compaction tires capable of exerting an average contact pressure from 60 to 90 pounds per square inch uniformly over the surface, adjusting ballast and tire inflation pressure as required. The Contractor shall furnish evidence regarding tire size; pressure and loading to confirm that the proper contact pressure is being developed and that the loading and contact pressure is uniform for all wheels.

4. Test Section: The Engineer may require the Contractor to place a test section whenever the requirements of this specification or Section M.04 are not met.

The Contractor shall submit the quantity of mixture to be placed and the location of the test section for review and acceptance by the Engineer. The equipment used in the construction of a passing test section shall be used throughout production.

If a test section fails to meet specifications, the Contractor shall stop production, make necessary adjustments to the job mix formula, plant operations, or procedures for placement and compaction. The Contractor shall construct test sections, as allowed by the Engineer, until all the required specifications are met. All test sections shall also be subject to removal as set forth in Article 1.06.04.

5. Transitions for Roadway Surface: Transitions shall be formed at any point on the roadway where the pavement surface deviates, vertically, from the uniform longitudinal profile as specified on the plans. Whether formed by milling or by bituminous concrete mixture, all transition lengths shall conform to the criteria below unless otherwise specified.

Permanent Transitions: A permanent transition is defined as any transition that remains as a permanent part of the work. All permanent transitions, leading and trailing ends shall meet the following length requirements:

a) Posted speed limit is greater than 35 MPH: 30 feet per inch of vertical change (thickness)
b) Posted speed limit is 35 MPH or less: 15 feet per inch of vertical change (thickness).
c) Bridge Overpass and underpass transition length will be 75 feet either
    (1) Before and after the bridge expansion joint, or
    (2) Before or after the parapet face of the overpass.

In areas where it is impractical to use the above described permanent transition lengths the use of a shorter permanent transition length may be permitted when approved by the Engineer.

Temporary Transitions: A temporary transition is defined as a transition that does not remain a permanent part of the work. All temporary transitions shall meet the following length requirements:

a) Posted speed limit is greater than 50 MPH
    (1) Leading Transitions = 15 feet per inch of vertical change (thickness)
    (2) Trailing Transitions = 6 feet per inch of vertical change (thickness)
b) Posted speed limit is 40, 45, or 50 MPH
    (1) Leading and Trailing = 4 feet per inch of vertical change (thickness)
c) Posted speed limit is 35 MPH or less
    (1) Leading and Trailing = 3 feet per inch of vertical change (thickness)

Note: Any temporary transition to be in-place over the winter shutdown period or during extended periods of inactivity (more than 14 calendar days) shall conform to the greater than 50 MPH requirements shown above.

6. Spreading and Finishing of Mixture: Prior to the placement of the bituminous concrete, the underlying base course shall be brought to the plan grade and cross section within the allowable tolerance. Immediately before placing the mixture, the area to be surfaced shall be cleaned by sweeping or by other means acceptable to the Engineer. The bituminous concrete mixture shall not be placed whenever the surface is wet or frozen. The Engineer will verify the mix temperature by means of a probe or infrared type of thermometer. A probe type thermometer, must be used in order to reject a load of mixture based on temperatures outside the range stated.

Placement: The bituminous concrete mixture shall be placed and compacted to provide a smooth, dense surface with a uniform texture and no segregation at the specified thickness and dimensions indicated in the plans and specifications.

When unforeseen weather conditions prevent further placement of the mix, the Engineer is not obligated to accept or place the bituminous concrete mixture that is in transit from the plant.

In advance of paving, traffic control requirements shall be set up daily, maintained throughout placement, and shall not be removed until all associated work including density testing is completed.

The Contractor shall inspect the newly placed pavement for defects in the mixture or placement before rolling is started. Any deviation from standard crown or section shall be immediately remedied by placing additional mixture or removing surplus mixture. Such defects shall be corrected to the satisfaction of the Engineer.

Where it is impractical due to physical limitations to operate the paving equipment, the Engineer may permit the use of other methods or equipment. Where hand spreading is permitted, the mixture shall be placed by means of suitable shovels and other tools, and in a uniformly loose layer at a thickness that will result in a completed pavement meeting the designed grade and elevation.

Placement Tolerances: Each lift of bituminous concrete placed at a uniform specified thickness shall meet the following requirements for thickness and area. Any pavement exceeding these limits shall be subject to an adjustment or removal. Lift tolerances will not relieve the Contractor from meeting the final designed grade. Lifts of specified non-uniform thickness, i.e. wedge or shim course, shall not be subject to thickness and area adjustments.

a) Thickness- Where the total thickness of the lift of mixture exceeds that shown on the plans beyond the tolerances shown in Table 4.06-3, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating an adjustment in accordance with Article 4.06.04.

TABLE 4.06-3: Thickness Tolerances

Mixture Designation	Lift Tolerance
S1	+/- ⅜ inch
S0.25, S0.375, S0.5	+/- ¼ inch

Where the thickness of the lift of mixture is less than that shown on the plans beyond the tolerances shown in Table 4.06-3, the Contractor, with the approval of the Engineer, shall take corrective action in accordance with this specification.

b) Area- Where the width of the lift exceeds that shown on the plans by more than the specified thickness of each lift, the longitudinal limits of such variation including locations and intervals of the measurements will be documented by the Engineer for use in calculating the adjustment in Article 4.06.04.

c) Delivered Weight of Mixture - When the delivery ticket shows that the truck exceeds the allowable gross weight for the vehicle type the quantity of tons representing the overweight amount will be documented by the Engineer for use in calculating an adjustment in accordance with Article 4.06.04.

Transverse Joints: All transverse joints shall be formed by saw-cutting a sufficient distance back from the previous run, existing bituminous concrete pavement or bituminous concrete driveways to expose the full thickness of the lift. A brush of tack coat shall be used on any cold joint immediately prior to additional bituminous concrete mixture being placed.

Tack Coat Application: Immediately before application, the area to be tacked shall be cleaned by sweeping or by other means acceptable to the Engineer. A thin uniform coating of tack coat shall be applied to the pavement immediately before overlaying and be allowed sufficient time to break (set) prior to any paving equipment or haul vehicles driving on it. All surfaces in contact with the bituminous concrete that have been in place longer than 3 calendar days shall have an application of tack coat. The tack coat shall be applied by a non-gravity pressurized spray system that results in uniform overlapping coverage at an application rate of 0.03 to 0.05 gallons per square yard for a non-milled surface and an application rate of 0.05 to 0.07 gallons per square yard for a milled surface. For areas where both milled and un-milled surfaces occur, the tack coat shall be an application rate of 0.03 to 0.05 gallons per square yard. The Engineer must approve the equipment and the method of measurement prior to use. The material for tack coat shall not be heated in excess of 160°F and shall not be further diluted.

Compaction: The Contractor shall compact the mixture to meet the density requirements as stated in Article 4.06.03 and eliminate all roller marks without displacement, shoving, cracking, or aggregate breakage.

When placing a lift with a specified thickness less than one and one-half (1 ½) inches, or a wedge course, the Contractor shall provide a minimum rolling pattern as determined by the development of a compaction curve

The use of the vibratory system on c oncrete structures is prohibited. When approved by the Engineer, the Contractor may operate a roller using an oscillatory system at the lowest frequency setting.

If the Engineer determines that the use of compaction equipment in the dynamic mode may damage highway components, utilities, or adjacent property, the Contractor shall provide alternate compaction equipment. The Engineer may allow the Contractor to operate rollers in the dynamic mode using the oscillatory system at the lowest frequency setting.

Rollers operating in the dynamic mode shall be shut off when changing directions.

These allowances will not relieve the Contractor from meeting pavement compaction requirements.

Surface Requirements: The pavement surface of any lift shall meet the following requirements for smoothness and uniformity. Any irregularity of the surface exceeding these requirements shall be corrected by the Contractor.

a) Smoothness- Each lift of the surface course shall not vary more than ¼ inch from a Contractor-supplied 10 foot straightedge. For all other lifts of bituminous concrete, the tolerance shall be ⅜ inch. Such tolerance will apply to all paved areas.

b) Uniformity- The paved surface of the mat and joints shall not exhibit segregation, rutting, cracking, disintegration, flushing or vary in composition as determined by the Engineer.

7. "Method I-Notched Wedge Joint" shall not be used in this contract.

~~**Longitudinal Joint Construction Methods:** The Contractor shall use Method I- Notched Wedge Joint (see Figure 4.06-1) when constructing longitudinal joints where lift thicknesses are between 1½ and 3 inches, except for S1mixes. Method II Butt Joint (see Figure 4.06-2) shall be used for lifts less than 1½ inches or greater than 3 inches, and S1mixes. During placement of multiple lifts of bituminous concrete, the longitudinal joint shall be constructed in such a manner that it is located at least 6 inches from the joint in the lift immediately below. The joint in the final lift shall be at the centerline or at lane lines. Each longitudinal joint shall maintain a consistent offset from the centerline of the roadway along its entire length. The difference in elevation between the two faces of any completed longitudinal joint shall not exceed ¼ of an inch in any location.~~

~~**Method I - Notched Wedge Joint**:~~

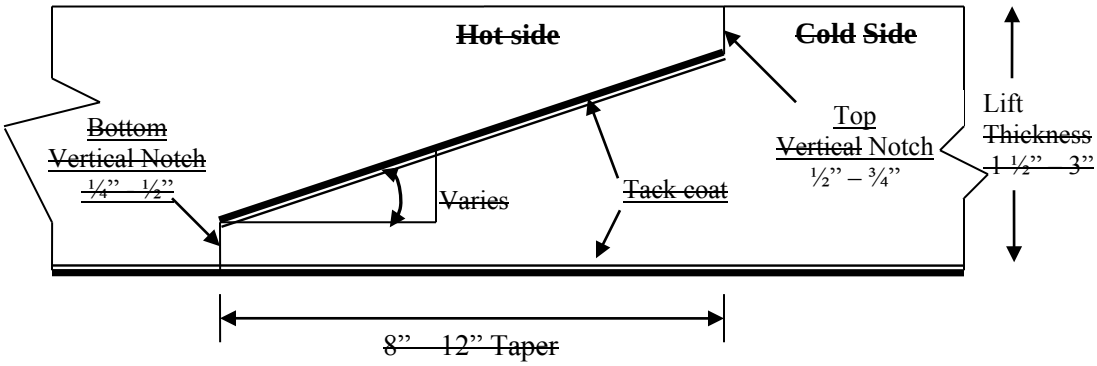


FIGURE 4.06-1: Notched Wedge Joint

A notched wedge joint shall be constructed as shown in Figure 4.06-1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches. The device shall have an integrated vibratory system.

The taper portion of the wedge joint must be placed over the longitudinal joint in the lift immediately below. The top vertical notch must be located at the centerline or lane line in the final lift. The requirement for paving full width "curb to curb" as described in Method II may be waived if addressed in the QC plan and approved by the Engineer.

The taper portion of the wedge joint shall be evenly compacted using equipment other than the paver or notch wedge joint device.

The taper portion of the wedge joint shall not be exposed to traffic for more than 5 calendar days.

~~The pavement surface under the wedge joint must have an application of tack coat material. Prior to placing the completing pass (hot side), an application of tack coat must be applied to the exposed surface of the tapered section; regardless of time elapsed between paver passes. The in-place time allowance described in Sub-article 4.06.03-7 does not apply to joint construction.~~

~~Any exposed wedge joint must be located to allow for the free draining of water from the road surface.~~

~~The Engineer reserves the right to define the paving limits when using a wedge joint that will be exposed to traffic.~~

~~If Method I, Notched Wedge Joint cannot be used on lifts between 1.5 and 3 inches, Method III Butt Joint may be substituted according to the requirements below for "Method III – Butt Joint with Hot Pour Rubberized Asphalt Treatment."~~

Method II - Butt Joint:

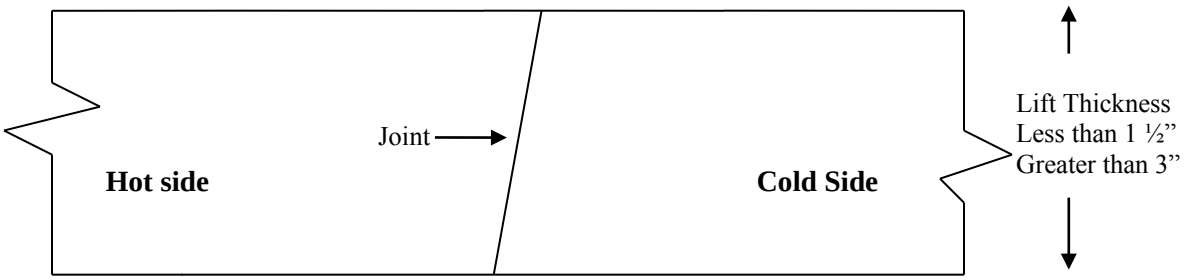


FIGURE 4.06-2: Butt Joint

When adjoining passes are placed, the Contractor shall utilize equipment that creates a near vertical edge (refer to Figure 4.06-2). The completing pass (hot side) shall have sufficient mixture so that the compacted thickness is not less than the previous pass (cold side). The end gate on the paver should be set so there is an overlap onto the cold side of the joint.

The Contractor shall not allow any butt joint to be incomplete at the end of a work shift unless otherwise allowed by the Engineer. When using this method, the Contractor is not allowed to leave a vertical edge exposed at the end of a work shift and must complete paving of the roadway full width "curb to curb."

Method III- Butt Joint with Hot Poured Rubberized Asphalt Treatment: If Method I Wedge Joint cannot be used due to physical constraints in certain limited locations; the contractor may submit a request in writing for approval by the Engineer, to utilize Method III Butt Joint as a substitution in those locations. There shall be no additional measurement or payment made when the Method III Butt Joint is substituted for the Method I Notched Wedge Joint. When required by the contract or approved by the Engineer, Method III (see Figure 4.06-3) shall be used.

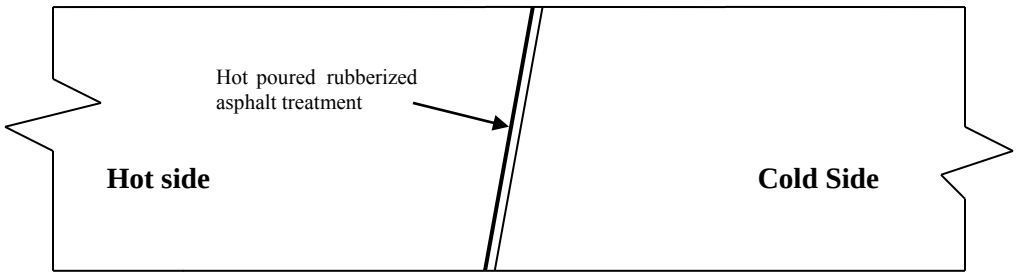


FIGURE 4.06-3: Butt Joint with Hot Poured Rubberized Asphalt Treatment

All of the requirements of Method II must be met with Method III. In addition, the longitudinal vertical edge must be treated with a rubberized joint seal material meeting the requirements of ASTM D 6690, Type 2. The joint sealant shall be placed on the face of the "cold side" of the butt joint as shown above prior to placing the "hot side" of the butt joint. The joint seal material shall be applied in accordance with the manufacturer's recommendation so as to provide a uniform coverage and avoid excess bleeding onto the newly placed pavement.

8. Contractor Quality Control (QC) Requirements:

The Contractor shall be responsible for maintaining adequate quality control procedures throughout the production and placement operations. Therefore, the Contractor must ensure that the materials, mixture and work provided by Subcontractors, Suppliers and Producers also meet contract specification requirements.

9. Temperature and Seasonal Requirements: Paving, including placement of temporary pavements, shall be divided into two seasons, "In-Season" and "Extended-Season". In-Season paving occurs from May 1 – October 14, and Extended Season paving occurs from October 15- April 30. The following requirements shall apply unless otherwise authorized or directed by the Engineer:

- Bituminous concrete mixes shall not be placed when the air or sub base temperature is below 40°F regardless of the season.
- Should paving operations be scheduled during the Extended Season, the Contractor must submit an Extended Season Paving Plan for the project that addresses minimum delivered mix temperature considering WMA, PMA or other additives, maximum paver speed, enhanced rolling patterns and the method to balance mixture delivery and placement operations. Paving during Extended Season shall not commence until the Engineer has approved the plan.

11. Acceptance Inspection, Sampling and Testing: Inspection, sampling, and testing to be used by the Engineer shall be performed at the minimum frequency specified in Section M.04 and stated herein.

Sampling for acceptance shall be established using ASTM D 3665, or a statistically based procedure of random sampling approved by the Engineer.

12. Density Dispute Resolution Process: The Contractor and Engineer will work in partnership to avoid potential conflicts and to resolve any differences that may arise during quality control or acceptance testing for density. Both parties will review their sampling and testing procedures and results and share their findings. If the Contractor disputes the Engineer's test results, the Contractor must submit in writing a request to initiate the Dispute Resolution Process within 7 calendar days of the notification of the test results. No request for dispute resolution will be allowed unless the Contractor provides quality control results within the timeframe described in Sub article 4.06.03-9 supporting its position.

13. Corrective Work Procedures: Any portion of the completed pavement that does not meet the requirements of the specification shall be corrected at the expense of the Contractor. Any corrective courses placed as the final wearing surface shall match the specified lift thickness after compaction.

If pavement placed by the Contractor does not meet the specifications, and the Engineer requires its replacement or correction, the Contractor shall:

a) Propose a corrective procedure to the Engineer for review and approval prior to any corrective work commencing. The proposal shall include:
   - Limits of pavement to be replaced or corrected, indicating stationing or other landmarks that are readily distinguishable.
   - Proposed work schedule.
   - Construction method and sequence of operations.
   - Methods of maintenance and protection of traffic.
   - Material sources.
   - Names and telephone numbers of supervising personnel.

b) Perform all corrective work in accordance with the Contract and the approved corrective procedure.

14. Protection of the Work: The Contractor shall protect all sections of the newly finished pavement from damage that may occur as a result of the Contractor's operations for the duration of the Project. Prior to the Engineer's authorization to open the pavement to traffic, the Contractor is responsible to protect the pavement from damage.

4.06.04—Method of Measurement:

1. HMA S *: The quantity of bituminous concrete measured for payment will be determined by the documented net weight in tons accepted by the Engineer in accordance with this specification and Section M.04.

2. Transitions for Roadway Surface: The quantity of **Milling for Pavement Transitions** for permanent transitions will be measured for payment by the number of square yards milled on the Project and approved by the Engineer. Temporary transitions shall not be measured for payment.

3. Material for Tack Coat: The quantity of tack coat will be measured for payment by the number of gallons furnished and applied on the Project and approved by the Engineer. No tack coat material shall be included that is placed in excess of the tolerance described in Article 4.06.03.

Method of Measurement:

a. Container Method- Material furnished in a container will be measured to the nearest ½ gallon. The volume will be determined by either measuring the volume in the original container by a method approved by the Engineer or using a separate graduated container capable of measuring the volume to the nearest ½ gallon. The container in which the material is furnished must include the description of material, including lot number or batch number and manufacturer or product source.

b. Truck Method- The Engineer will establish a weight per gallon of the tack coat based on the density at 60ºF for the material furnished. The number of gallons furnished will be determined by weighing the material on scales furnished by and at the expense of the Contractor, or from the automated metering system on the delivery vehicle.

4.06.05—Basis of Payment:

1. HMA S* or PMA S*: The furnishing and placing of bituminous concrete will be paid for at the Contract unit price per ton for "HMA S*"

- All costs associated with cleaning the surface to be paved, including mechanical sweeping, are included in the general cost of the work. All costs associated with constructing longitudinal joints are included in the general cost of the work.
- All costs for dispute resolution are included in the general cost of the work.

2. There will be no extra pay item for tack coat application. The contractor is expected to schedule his paving operations in a timely manner to eliminate the need for tack between the binder and finish surface course. If there is a delay of more than 3 days between applications of courses then the Contractor shall be responsible for applying a full tack coat at the Contractors expense.

ITEM	**UNIT**
HMA S0.50	**TON**
HMA S0.375	**TON**

END OF SECTION

SECTION 5.03
CONCRETE SIDEWALK EXTENSION ON BRIDGE

ITEM # 0503007A CONCRETE SIDEWALK EXTENSION ON BRIDGE

SCOPE OF WORK

Work under this technical specification shall consist of furnishing all labor, materials, tools, and equipment necessary to complete the concrete sidewalk extension on the existing bridge as indicated on the plans, in accordance with dimensions and details shown, or as directed by the Engineer.

MATERIALS

Concrete shall meet the requirements for Class "F" type in Form 817, Section M.03. Reinforcing steel and mesh shall meet the requirements of Form 817, Article M.06.01. Chemical anchoring material shall meet the requirements of Subarticle M03.01 and the manufacturer's requirements.

CONSTRUCTION METHODS

The existing bituminous pavement on the bridge deck shall be milled in accordance with the plans. Care shall be taken to ensure protection of the existing waterproof membrane. The equipment for milling the pavement surface shall be designed and built for milling bituminous concrete pavements. It shall be self-propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation. The pavement shall be thoroughly swept. Care shall be taken to protect the existing asphaltic plug expansion joints.

Existing concrete sidewalk slabs and curbing shall be inspected, repaired and/or replaced based upon the plans and details and at the direction of the City of Torrington.

The holes shall be drilled and prepared in strict accordance with the chemical anchor manufacturer's instructions. Chemical anchor shall be prepared in accordance with the manufacturer's instructions and shall be placed within the working time specified time. The Contractor is fully responsible for the type of drilling equipment used and as a result any damage is inflicted on the existing structure shall be repaired by the Contractor at no extra cost to the City.

The reinforcing steel shall be in accordance with Form 817, Section 6.02 and the concrete shall be placed in accordance with Section 9.21. All exposed corners shall be chamfered, and the concrete shall be smoothed by accepted finishing methods. Epoxy shall be installed in accordance with the manufacturer's requirements.

Joint sealant products including sidewalk construction joint silicone sealants and asphaltic flashing cement and joint sealants shall be selected by the contractor based upon their intended applications and manufacturer's instruction and approved by the City prior to installation. All materials shall be specified for exterior salt tolerant locations and suitable for use on roadway/bridge applications.

MEASUREMENT

The price for this item shall be on a lump sum basis for "Concrete Sidewalk Extension on Bridge" and shall include all the work as described above, including bituminous milling, reinforcing, drilling holes, furnishing and installing epoxy and constructing concrete sidewalk in accordance with the plans.

PAYMENT

Payment for this work will be at the Contract Lump Sum price for "Concrete Sidewalk Extension on Bridge" and shall include all equipment, tools and labor incidental to the completion of the item.

ITEM	**UNIT**
Concrete Sidewalk Extension on Bridge	**L.S.**

SECTION 5.86
STORM DRAINAGE

ITEM 0586060A – SPECIAL TYPE II CATCH BASIN WITH SINGLE TYPE "C" TOP
ITEM 0586600A – RESET TYPE "CL" CATCH BASIN TOP

PART 1 - GENERAL

1.01 SCOPE

A. The work covered by this section includes the furnishing of all plant, labor, equipment, appliances, and materials, and performing all operations in connection with the satisfactory replacement or adjustment of catch basin tops and storm and sanitary sewer manhole frames & covers and all incidental work, complete, in strict accordance with the specifications and applicable contract drawings and standard details, and conditions of the CONTRACT.

B. It is the intention of these specifications and the desire of the ENGINEER that the catch basins and manholes, including all component parts, have adequate space, strength and leak proof qualities considered necessary by the ENGINEER for the intended service. Space requirements and configurations, shall be as shown on the drawings. In any approved catch basin manhole, the complete structure shall be of such material and quality as to withstand loads of 8 tons (H20 loading) without failure and prevent leakage in excess of one gallon per day per vertical foot of manhole, continuously for the life of the structure. (A period generally in excess of 25 years is to be understood in both cases.)

1.02 DESCRIPTION

A. Manhole Frame & Covers (Storm and Sanitary Sewer) shall either be replaced or adjusted (reset) at the locations, to the elevations, and in accordance with notes and details shown on the Contract Drawings, as well as these technical specifications.

B. Catch Basin Tops shall either be replaced (converted) or adjusted (reset) at the locations, to the elevations, and in accordance with notes and details shown on the Contract Drawings, as well as these technical specifications.

1.03 QUALITY ASSURANCE

A. Storm drain pipe may be inspected at the manufacturing source and at the job site by the ENGINEER.

B. Contractor shall notify the ENGINEER for inspection of pipe and drainage structure installation prior to backfilling trenches.

PART 2 - MATERIALS

The materials to be used in the construction of storm drainage shall be those indicated on the plans or ordered by the Engineer and shall conform to Section M.08 of the STANDARD SPECIFICATIONS.

2.01 BEDDING & BACKFILL MATERIAL

Trench and structure backfill material shall conform to the requirements of Section 02220, Trench, Backfilling and Compaction.

2.02 STORM DRAIN PIPE MATERIALS

A. HDPE - High Density Polyethylene Pipe Smooth Bore (Type S) including all related fittings (ex. Adapters, collars, and wye's). HDPE shall conform to Section M.08 of the Standard Specifications.

B. Ductile Iron Pipe (DIP) Class 52 shall be centrifugally cast pipe conforming to ANSI Specification A21.50 and A21.51 latest revisions. Ductile iron pipe shall have push-on type joints conforming to ANSI A21.11, designed for assembly using a continuous molded ring gasket of solid cross section, positioned in an annular

space in the pipe socket in a manner to be locked in place to form a positive seal. Ductile iron fittings and specials shall conform to ANSI Specification A21.10 latest revisions and shall be of the type suitable for jointing with the piping specified above. Ductile iron fittings shall be of the sizes, dimensions and types indicated as specified and as required for the proper fitting of the completed work. Ductile Iron Pipe is included if it is necessitated by cover requirements. This is a field situation.

C. Fernco (flexible) couplings conforming to ASTM D 5926, C 1173, and CSA B602.

D. Inserta Tee – three-piece lateral connection consisting of a PVC hub, rubber sleeve, and stainless steel band. Proper sized "Wet Diamond Bit" is to be obtained through vendor for coring into concrete pipe (see attached detail to this specification).

E. Underdrain pipe and all related fittings (ex. - wye's, bends, couplers, caps, cleanout plug, frame and cover) shall be size of six inch (6"), and type of pipe is to be N-12 ST(soiltight) IB (integral bell) Dual Wall HDPE installed in stone per detail in Contract Drawings. The cleanout manhole frame and cover shall be Campbell Foundry #4153, or approved equal.

F. Weep pipe into catch basin shall be size of four inch (4"), and type of pipe is to be SDR 35 perforated pipe and shall conform to ASTM D- 3034. End cap is to match the size and type SDR 35 pipe.

2.03 CASTINGS

A. Catch Basin frames and grates shall conform to Type "C" or Type "C-L" (single or double grate) as shown on the Contract Drawings. Grate and frame shall be galvanized steel with surface suitable for tack weld. Galvanizing shall conform to Section M.06.03.

2.04 MANHOLES, STORM - PRECAST CONCRETE

A. All pre-cast storm manholes shall conform to the requirements of Section 5.07 of the STANDARD SPECIFICATIONS.

B. Frames and covers shall be as outlined on the Contract Drawings. Storm Manhole Frame is Campbell Foundry Pattern No. 1009. Storm Manhole is Campbell Foundry Pattern No. 12037312. The "Heavy Duty (Slotted) Manhole Frame and Grate" is to be Campbell Foundry Pattern No. 1184. Contractor is responsible to specifically state when ordering the storm and sanitary manhole frame and cover, that the identification wording stamped on the cover is to be per City Detail 5.1 in the Contract Drawings.

C. All drainage structures with thru drainage flow shall have shaped invert. End of line structures shall have slab only bottoms, with no sumps or shaped inverts.

D. Manhole steps shall <u>not</u> be installed in riser structures.

2.04 GRADE RINGS

The use of precast grade rings to adjust manholes and catch basins is not permitted.

2.05 BRICK MASONRY

A. This section applies to brick masonry for the grade adjustment.

B. The brick shall be sound, hard, and uniform dense brick, regular and uniform in shape and size, of compact texture, and satisfactory to the ENGINEER. Brick shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C 32-73, for Grade SS, hard brick.

Clay or Shale Brick: Comply with ASTM C32 for sewer brick and manhole brick, grade as selected. Brick dimensions shall be 4" x 8" x 2½" nominal and shall yield the wall thickness as shown on the plans.

C. Rejected brick shall be immediately removed from the work site by the CONTRACTOR at his own expense.

D. The mortar shall be composed of portland cement, hydrated lime and sand, in the proportions of 1 part cement to 1/2 part lime to 4-1/2 parts sand (by volume). The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed three times the sum of the volume of cement and lime.

E. Cement shall be Type II Portland Cement conforming to ASTM C-150, Standard Specifications for Portland Cement.

F. The hydrated lime shall be Type S conforming to the ASTM Standard Specifications for Hydrated Lime for Masonry Purposes, Designation C207.

G. The sand shall consist of inert natural sand conforming to the ASTM Standard Specifications for Concrete (Fine) Aggregates, Designation C33as follows:

Sieve	Percent Passing by Weight
3/8"	100%
#4	95-100%
8	80-100%
16.	50- 85%
30.	25- 60%
50	10- 30%
100	2- 10%

Fineness Modulus 2.3 - 3.1

H. Only clean bricks shall be used in brickwork for manholes. The brick shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.

I. Each brick shall be laid in full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.

J. Brick masonry shall be protected from too rapid drying by the use of burlap kept moist, or by other approved means, and shall be protected from the weather and frost, all as required.2.05 APPURTENANCE MATERIAL

K. Mortar shall conform to Section M.11.04 of the STANDARD SPECIFICATIONS, and comply with ASTM C270, Type M, for the pipe joints and manhole and inlet brickwork.

L. Concrete for storm drainage construction shall be in accordance with Section M.03.01 of the STANDARD SPECIFICATIONS. Strength shall be 4,000 psi at age 28 days.

M. Reinforcement shall comply with ASTM A615.

N. Geotextile shall be of a type appearing on the Connecticut Department of Transportation's Approved Products List for Geotextiles, referred to in Subsection M.08.01-26 of the STANDARD SPECIFICATIONS

O. "Prosoco Consolideck Saltguard WB Sealer" (or approved equal) for salt protection shall be applied on all exposed concrete surfaces, including the paved inverts. If a substitute product is proposed by the Contractor, then the contractor shall submit product information for City approval. The product shall be specifically manufactured for this type of application. The rate of application shall be as recommended by manufacturer. A curing period recommended by the manufacturer shall be followed prior to application of the "Saltguard".

PART 3 **- CONSTRUCTION METHODS**

3.01 GENERAL

A. All pipes will be laid in an open trench of dimensions as shown in Details on the Contract Drawings. No projecting pipe conditions will be allowed.

B. Lengths of storm drain pipe shown on the Drawings are approximate distances inside wall to inside wall of structures. Contractor shall install pipe based on actual field conditions. Slopes of pipe specified on the Drawings shall be verified by field measurement prior to trenching.

C. Particular care shall be exercised in establishing the relationship of storm drain pipe, drainage structure bases, and final drainage top conditions. Drainage structure tops are required to be located in specific position and orientation. Subsurface construction is to be located to allow drainage structure construction as detailed on the Drawings without modification. In case of misalignment of drainage structure tops and bases, Contractor will be required to correct the construction as directed by the Engineer.

D. Any new direct connections to storm pipe shall specifically be with “Inserta Tee” of the specific pipe size and type. Inserta Tee is a three-piece lateral connection consisting of a PVC hub, rubber sleeve, and stainless steel band. The tap into the pipe for the “Inserta Tee” is to be done with a proper sized “Wet Diamond Bit”, to be obtained from the Inserta Tee supplier.

E. Bulkhead pipes and structures as called out on the plans shall be blocked with an eight inch 8” thick wall of brick and masonry (see appurtenance material above).

3.02 STRUCTURES

A. These structures shall be constructed in accordance with the requirements contained herein for the character of work involved. Provisions pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval, unless called for on the plans or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

B. The surfaces of the tops of all concrete catch basins, junction boxes and drop inlets shall be given a coat of Prosoco Consolideck Saltguard WB Sealer (protective compound material) immediately upon completion of the concrete curing period at the rate of .04 gallons per square yard (0.2 liter per square meter). The material for this work shall conform to the requirements of Subarticle M.03.01-11

C. All structure tops are to be laid in full mortar beds unless otherwise noted on the plans.

D. Metal fittings for catch basins, junction boxes, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

E. When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size of the original main line, extending from the drainage structure to the nearest joint of the existing pipe.

F. Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the tops, frames and covers reset, or the grates or covers may be raised by extensions of suitable height approved by the Engineer.

G. If the frames, covers or tops are broken or so damaged as to be unfit for further use, they shall be replaced with new, sound material conforming to the above requirements for the material involved.

H. Weep pipes of the size and type specified shall be installed as shown on the Contract Drawings, or as directed by the Engineer. The work consists of coring if necessary, if weep pipe is not incorporated into the masonry work around the storm pipe into and/or out of the catch basin.

I. Where existing or proposed pipes are shallow or where precast structures are not possible to be installed in the opinion of the Engineer, then at the direction of the Engineer catch basins may be constructed of masonry and concrete block with a precast top frame and cover, precast flat top and precast base slab.

3.03 BEDDING MATERIAL

Pipe and structure bedding shall be placed in accordance with Section 02220, Trenching, Backfilling and Compacting.

3.04 PIPE LAYING

A. Pipe laying shall proceed upgrade where practicable. Pipe shall be laid true to line and grade with a straight and uniform invert. Pipe shall not be laid in a wet or muddy trench. Trenches shall be dewatered as required and the bottom shall be firm, smooth, and properly shaped as specified.

B. Pipe size connections in and out of all drainage structures shall be re-connected with a correct pipe size that matches the size of the original main line pipe size.

C. The Contractor shall pay particular attention to invert elevations as indicated on the Contract Drawings. In some locations, the pipe is proposed to be lowered.

D. Underdrain and all related fittings (ex. - wye's, bends, couplers, caps, cleanout plug, frame and cover) and cleanout assembly of the size and type specified shall be installed as shown on the Contract Drawings, or as directed by the Engineer. The work consists of coring, if necessary, if the underdrain pipe is not incorporated into the masonry work around the storm pipe into and/or out of the catch basin. The cleanout is a complete vertical assembly and begins at the wye consisting of all pipe, fittings, frame and cover to proposed finished grade as shown on the Contract Drawings

3.05 BACKFILLING

Backfilling above pipe bedding shall be as indicated on the Contract Drawings and in accordance with Section 02220, Trenching, Backfilling and Compacting**.**

3.06 APPURTENANCES

A. All drainage structures are to be constructed as shown on the Drawings.

1. Contractor shall furnish and install drainage structures as shown in detail on the Drawings.

2. All drainage structures with thru drainage flow shall have shaped invert.

3. All mortar joints shall be filled full. Joints shall be struck flush inside and out.

4. Joints shall not be less than ¼ inch and not more than 2 inch in thickness. No spalls or bats shall be used except for shaping around irregular openings or when unavoidable at corners.

5. All pipe entering drainage structures shall be cut and ground smooth with the face of the wall. Breaking the pipe will not be acceptable.

6. All joints around pipe and structure walls at the face of the wall shall be packed full with mortar.

7. The bottom of drainage structures shall be clean of all debris and walls shall be wiped clean of mortar as work progresses.

8. Catch basin tops shall be cast-in-place to line and grade and shall slope continuous with gutter.

9. Masonry construction is required to be solid. All joints and spaces shall be filled full of mortar as units are laid. Structural masonry construction practice is required. Outside joints are to be filled full or mortar and struck flush. Walls are to be constructed to line and plumb.

10. Masonry construction (particularly green mortar work) is to be protected from damage caused by backfilling and compaction operations. Any damage caused during backfilling or compaction will be repaired at the Contractor's own expense.

11. Pipes or drainage structures shall not be broken by impact methods. Cutting of pipe with pipe saw or coring of a drainage structure is required.

3.07 CONCRETE CONSTRUCTION

Precast concrete shall conform to the requirements of M.08.02 of the STANDARD SPECIFICATIONS. Shop Drawings for structures shall be submitted to Engineer for approval prior to delivery.

3.08 CLEANUP

Pipes and structures shall be left clean and free from mud or debris of any kind. When looked through, each line between structures shall show a full circle of light. Otherwise, Contractor shall be required to remove and replace the defective portion of the work.

3.09 WORKMANSHIP

Any pipe which is not in true alignment and grade and properly placed as to the center line of the road or which shows any undue settlement after laying, or is damaged, shall be taken up and re-laid or replaced without extra compensation.

3.10 CONNECTIONS TO EXISTING STORM SEWERS AND STRUCTURES

A. The CONTRACTOR shall make all connections to the existing facilities as indicated on the Drawings and as herein specified, or as directed.

B. The CONTRACTOR shall furnish all pipe, fittings and appurtenances. The CONTRACTOR shall do all excavation and backfill as required.

C. Existing pipelines damaged by the CONTRACTOR shall be replaced by him at his own expense in a manner approved by the ENGINEER.

3.11 INTERFERENCE

A. The CONTRACTOR shall develop a program for the construction and placing in service of the new works subject to the approval of the ENGINEER. All works involving cutting into and connecting to the existing facilities shall be planned so as to interfere with operation of the existing facilities for the shortest possible time and when the demands on the system best permit such interference even to the extent of working outside of normal working hours to meet these requirements.

B. The CONTRACTOR shall have all possible preparatory work done and shall provide all labor, tools, material supervision and equipment required to do the work in one continuous operation.

C. The CONTRACTOR shall have no claim for additional compensation, by reason of delay or inconvenience, for adapting his operations to the needs of the public.

3.12 RESET UNITS

A. All manhole frames shall be adjusted and set to the finished design grade AFTER THE BASE COURSE ASPHALT HAS BEEN INSTALLED. The contractor may remove the frames and plate the openings or leave the frames buried.

B. The contractor shall set the manhole frames to 1/4" -3/8" below the final finished top course asphalt grade or 1/4" -3/8" below total thickness of the top course asphalt. The area around the manhole frame shall be restored with compacted processed aggregate base and patched with the design depth of base course asphalt.

C. Catchbasin tops shall be set to finished grade PRIOR TO BASE COURSE ASPHALT INSTALLATION and shall be set to the design grades or as needed to match field-adjusted grades during grading operations to or as directed by the Engineer.

PART 4 – METHOD OF MEASUREMENT

1. Drainage work will be measured for payment as it appears in the Bid Proposal form and as defined in other Sections of these Specifications. Payment will include full compensation for all labor, materials, pipe and structure removal, pipe and structure cutting, pipe and structure removal and disposal, coring, equipment, gravel/granular fill, bedding material, masonry collars, excavation, backfilling and backfill material, stockpiling of materials, saw cutting and sidewalk and pavement removal and all other items necessary or incidental to the completion of the work under this section in accordance with these Specifications and the Drawings.

2. There will be no measurement or payment for work and materials involved with connecting new drainage structures into a run of existing pipe, regardless if the diameter is upsized, within three feet (3') measured from the inside wall of the structure including the length of the adapter/miscellaneous fittings. Any additional work associated with the setting connections of the structure and the pipe shall be incidental thereto.

3. New pipe installed from structure to structure, or structure to existing pipe as listed in the Contract Bid Form, and as called for on the Contract Drawings, will be measured from the beginning to the end of the installed pipe inside wall of manhole or catch basin to the inside wall of manhole, catch basin or inside face of existing pipe connection.

4. Catch Basins will be measured by the actual number of each installed, complete, of the types shown on the Contract Drawings for the type specified, complete in place, which shall include all materials, equipment, tools and labor incidental thereto, and all adjacent pavement restoration to the street, curb and sidewalk. Catch Basins and shall be constructed with a paved invert as indicated on the Contract Drawings or where directed by the Engineer. The Engineer may direct Contractor to construct paved invert within existing manholes. Paved inverts will be measured separately for catch basins/manhole per each regardless of the structure base dimensions.

5. Resetting of existing manhole or catch basin tops, frames and covers will be measured per each complete, including excavation removal and disposal, furnishing and installing materials for rebuilding and setting top for catch basin top or manhole frame and cover of the size and type specified in the Contract Drawings.

6. There will be no measurement or direct payment for the application of the "Prosoco Consolideck Saltguard WB Sealer" (protective compound material), but the cost of this work shall be considered as included in the general cost of the work.

7. Replacement of new manhole or catch basin tops, frames and covers will be measured per each complete, including sawcutting, excavation removal and disposal, setting, and pavement repair patch for catch basin top or manhole frame and cover of the size and type specified in the Contract Drawings.

8. "Inserta Tee" will be measured complete per each unit. This includes obtaining the proper sized "Wet Diamond Bit" from the Inserta Tee supplier, coring, PVC hub, rubber sleeve, and stainless steel band.

9. In addition to the price per structure, paved inverts shall be measured per each for the type of structure. Single or double catch basin shall be considered the same type. Existing manholes shall be measured separately.

10. Underdrain pipe of the size and type specified will be measured per linear foot and measured from the beginning to the end of the installed pipe inside wall of manhole or catch basin to the inside wall of manhole, catch basin or inside face of existing pipe connection.

11. Wye's for the underdrain pipe of the size and type specified will be measured per each, complete, as indicated on the Contract Drawings. Other work and material cost are covered under the cost of the underdrain.

12. Cleanout's (vertical assembly from the wye to the cleanout plug, including the frame and cover) for the underdrain pipe of the size and type specified will be measured per each, complete, as indicated on the Contract Drawings. Other work and material cost are covered under the cost of the underdrain.

13. Weep pipe into catch basin and end cap of the size and type specified will be measured per linear foot measured from the beginning to the end of the installed weep pipe. Other work and material cost are covered under the cost of the structure. Engineer shall direct the Contractor in the field as to the length of the weep pipe to be installed.

14. Special Type II Catch Basin with Single Type "C" Top will be measured by the actual number of each installed, as shown on the Contract Drawings, complete in place, which shall include all materials, excavation, removal and disposal of existing structure, equipment, tools and labor incidental thereto. This item shall also include all work and materials involved with connecting this structure into the existing pipes, including adapters/miscellaneous fittings.

PART 5 – BASIS OF PAYMENT

Basis of Payment: These structures will be paid for as follows:

A. Pipe will be paid for at the contract unit price per linear foot for the type specified, complete in place, which price shall include saw cutting and pavement removal; excavation; dewatering; trench support; disposal of trench excavation – earth; all materials including pipe bedding stone and fabric; backfilling including back fill materials; stockpiling of materials; compaction; grading; utility identification warning tape; replacement of curbs, sidewalks and driveways; temporary and permanent pavement per plan/City details; and all work necessary or incidental to the completion of the work under this section of the Specifications. Payment made shall be considered as full compensation for furnishing all labor, equipment, tools, material, services and installing pipe of the size and type shown on the plans regardless of depth, and as detailed and tabulated in the bid proposal complete in place, including all connections necessary to constitute a fully operational system approved by the ENGINEER.

B. Manholes will be paid for at the contract unit price each for the type specified complete in place, which price shall include all materials, equipment, tools and labor incidental thereto. If so indicated on the Contract Drawings, manholes shall be constructed with paved inverts. Paved invert will be included in the price for manholes.

C. Precast Catch Basins will be paid for at the Contract unit price each for the type specified, complete in place, which price shall include all materials, equipment, tools and labor incidental thereto, and all adjacent pavement restoration to the street, curb and sidewalk. Catch Basins and as well as existing manholes shall be constructed with a paved invert at locations where directed by the Engineer. Paved inverts will be paid separately for catch basins and manholes at the contract unit price per each regardless of the structure base dimensions.

D. There will be no separate payment for work and materials involved with connecting new drainage structures into a run of existing pipe, regardless if the diameter is upsized, within three feet (3') measured from the inside wall of the structure including the length of the adapter/miscellaneous fittings. Any additional work associated with the setting connections of the structure and the pipe shall be incidental thereto.

E. Flared end sections shall be paid per each unit installed complete.

F. Reset Units will be paid for at the contract unit price each for "Reset Manhole," "Reset Catch Basin, Single Grate or Double Grate" of the type specified, respectively, complete in place, which price shall include excavation and disposal, furnishing and installing materials for rebuilding and setting top, pervious material, backfill, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto.

G. Drop Inlets will be paid for at the contract unit price each for "Drop Inlet," of the type specified, complete in place, which price shall include all materials, equipment, tools and labor incidental thereto. Drop Inlets shall be constructed with a paved invert as indicated on the Contract Drawings. Paved invert will be included in the price for drop inlet per each of the type specified.

H. Weep pipe into catch basin (including coring if necessary) and end cap of the size and type specified will be paid for at the unit price bid per linear foot, complete in place, and all work necessary or incidental to the completion of the work under this section of the Specifications. Payment made shall be considered as full compensation for furnishing all labor, equipment, tools, material, services and installing pipe of the size and type shown on the plans regardless of depth, and as detailed and tabulated in the bid proposal complete in place, including all connections necessary to constitute a fully operational system approved by the ENGINEER. Other work and material cost are covered under the cost of the structure.

I. The resetting of existing pipe including all additional backfill material, compaction, equipment, tools and labor incidental thereto will be paid for at the contract unit price per linear foot for “Reset Existing Pipe” for the type and size specified.

J. "Frames, Covers and Tops" when required in connection with reset units, will be paid for at the contract unit price each for such "Replace Manhole Frame and Cover or Convert Catch Basin Top", complete in place, including all incidental expense; or when no price exists, the furnishing and placing of such material will be paid for as extra work. When the catch basin top has a stone or granite curb in its design, this curb or inlet shall be included in the cost of the top.

K. Conversion of drainage structures will be paid for at the contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to Manhole," or "Convert of Manhole to Catch Basin”, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, pervious material, backfill, all alterations to present catch basin, all materials including new catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

L. The removal of existing, manholes, catch basins, junction boxes, including all additional gravel backfill materials, compaction, equipment, tools, surface restoration and labor incidental thereto will be paid for at the contract unit price each for “Remove Existing Catch Basin”.

M. There will be no measurement and payment for pipe removal and restoration including all additional gravel backfill materials, trench pavement and lawn repair, compaction, equipment, tools and labor incidental thereto.

N. Bulkhead existing pipes and structures regardless of inside diameter, material, or use, including all additional gravel backfill materials, compaction, and equipment, tools and labor incidental thereto will be incidental to the work required as specified for the item for “Remove Existing Catch Basin”.

O. “New Pipe Connection - Inserta Tee” regardless of size and type specified, will be paid for per each unit, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, pervious material, backfill, all materials including “Inserta Tee” (including PVC hub, rubber sleeve, & stainless steel band) of the size and type specified, all equipment, tools including purchase or rental of “Wet Diamond Bit”, and labor incidental thereto

P. Fernco couplers used as an alternate connection to existing pipes will not be paid for separately, but such cost shall be included in the overall contract unit prices.

Q. Paved inverts shall be paid per each for the type of structure per Bid Form items. Single or double catch basin shall be considered the same type. Existing manholes shall be paid per each separately as listed on the Bid Form.

R. Underdrain pipe of the size and type specified will be paid for at the unit price bid per linear foot, complete in place, which price shall include saw cutting and pavement removal; excavation; dewatering; trench support; disposal of trench excavation – earth; all materials including pipe bedding stone and fabric; backfilling including back fill materials; stockpiling of materials; compaction; grading; utility identification warning tape; replacement of curbs, sidewalks and driveways; temporary and permanent pavement per plan/City details; and all work necessary or incidental to the completion of the work under this section of the Specifications. Payment made shall be considered as full compensation for furnishing all labor, equipment, tools, material, services and installing pipe of the size and type shown on the plans regardless of depth, and as detailed and tabulated in the bid proposal complete in place, including all connections necessary to constitute a fully operational system approved by the ENGINEER.

S. Wye's for the underdrain pipe of the size and type specified will be paid for at the unit price bid per each, complete in place, as indicated on the Contract Drawings. Other work and material cost are covered under the cost of the underdrain.

T. Cleanout's (vertical assembly from the wye to the cleanout plug, including the frame and cover) for the underdrain pipe of the size and type specified will be paid for at the unit price bid per each, complete in place, as indicated on the Contract Drawings. Other work and material cost are covered under the cost of the underdrain.

U Special Type II Catch Basin with Single Type "C" Top will be paid for by the actual number of each installed as shown on the Contract Drawings, complete in place, which shall include all materials, equipment, tools and labor incidental thereto. There shall be no separate payment for work and materials involved with connecting this structure into the existing pipes, including adapters/miscellaneous fittings.

ITEM	**UNIT**
SPECIAL TYPE II CATCH BASIN WITH SINGLE TYPE "C" TOP	**EACH**
RESET TYPE "CL " CATCH BASIN TOP	**EACH**

END OF SECTION

SECTION 7.28
STONE DUST MULTI-USE TRAIL

ITEM 0728050A STONE DUST MULTI-USE TRAIL (2" STONEDUST)

7.28.01—DESCRIPTION: Work within this section shall consist of furnishing and installing materials to construct a stone dust multi-use trail surface, placed where shown on the plans or where directed by the Engineer and constructed in accordance with these specifications.

7.28.02—MATERIALS: All materials for this work shall meet the requirements of the CTDOT 817 and conform to the following gradation when tested from the supply source. This material shall be comprised of a granite base material with a gray color hue. A material sample shall be submitted to the Engineer prior to furnishing material to site for review and approval of color, texture and composition.

Square Mesh Sieve	Percent Passing by Weight
3/8"	100
#4	85-100
#8	60-85
#16	35-60
#30	25-35
#50	10-25
#100	5-10
#200	2-5

7.28.03—CONSTRUCTION METHODS: The prepared aggregate base of the stone dust multi-use trail shall be carefully shaped to the required cross section and compacted as specified in Article 2.02.03. The contractor shall install the stone dust multi-use trail at the locations, to the dimensions and details shown on the plans or as directed by the Engineer.

After the stone dust surfacing has been placed as specified above, its entire area shall be compacted with equipment specifically manufactured for that purpose. The use of hauling and spreading equipment shall not be considered as a substitute for compacting equipment. Compaction shall be continued until the entire course is uniformly compacted to the required minimum density.

Should the processed aggregate base material beneath the stone dust surface become churned up and mixed with crushed stone surface material at any time, the Contractor shall, without additional compensation, remove the mixture and replace it with new process aggregate base material to the required thickness shown on the plans or as previously required by the Engineer. Such replaced base material shall be compacted to the required minimum density prior to installing the new stone dust surface.

7.28.04—METHOD OF MEASUREMENT: Stone dust multi-use trail will be measured horizontally in place after final grading and compaction. The thickness will be as indicated on the plans, or as ordered by the Engineer.

Measurements to determine the thickness will be made by the Engineer, if deficient thicknesses are found, the Engineer will make such additional measurements considered necessary to determine the longitudinal limits of the deficiency. Areas with deficient thicknesses shall be corrected, as ordered by the Engineer, without additional compensation to the Contractor.

7.28.05—BASIS OF PAYMENT: This work will be paid at the Contract unit price per square foot for "Stone Dust Multi-Use Trail," which price shall include all materials, equipment, tools and labor incidental thereto.

PAY ITEM	**PAY UNIT**
STONE DUST MULTI-USE TRAIL (2" STONEDUST)	**S.F.**

END OF SECTION

SECTION 9.21
CONCRETE OBSERVATION PLATFORM

ITEM # 0921005A CONCRETE SIDEWALK RAMP
ITEM # 0921040A CONCRETE OBSERVATION PLATFORM

SCOPE OF WORK

Work under this technical specification shall consist of furnishing all labor, materials, tools, and equipment necessary to construct the concrete observation platform at the location indicated on the plans, in accordance with dimensions and details shown, or as directed by the Engineer. This section also includes the installation of concrete sidewalk ramp.

MATERIALS

Concrete shall meet the requirements for type Class "A" in Form 817, Section M.03. Reinforcing steel shall meet the requirements of Form 817, Article M.06.01. Epoxy and Hilti bars shall be in accordance with the manufacturer.

The Detectable Warning Pad

a. Detectable Warning Pad shall be a prefabricated detectable warning surface tile as manufactured from Engineered Plastics Inc. 300 International Drive, Suite 100 Williamsville, NY 14221, telephone number (800) 682-2525 or the approved equal from ADA Fabricators, INC. P.O Box 179 North Billerica, MA 01862 telephone number (978) 262-9900. The tile shall conform to the dimensions shown on the plans and have a gray homogeneous color throughout in compliance with Federal Standard 595 Color FS 36496 or approved equal.
b. Materials for Detectable Warning Pad bedding concrete shall conform to the requirements of Article M.03.01 of the REFERENCE SPECIFICATIONS, for Class "F" Concrete**.** The concrete shall contain not less than 5% nor more than 7% entrained air at the time the concrete is deposited in the forms. Air-entrainment shall be obtained and the concrete cured in accordance with the provisions of Article 4.01.03 for Concrete Pavement.

CONSTRUCTION METHODS

The holes shall be drilled and prepared in strict accordance with the chemical anchor manufacturer's instructions. Chemical anchor shall be prepared in accordance with the manufacturer's instructions and shall be placed within the working time specified time. The Contractor is fully responsible for the type of drilling equipment used and as a result any damage is inflicted on the existing structure shall be repaired by the Contractor at no extra cost to the City.

The reinforcing steel shall be in accordance with Form 817, Section 6.02 and the concrete shall be placed in accordance with Section 9.21. All exposed corners shall be chamfered, and the concrete shall be smoothed by accepted finishing methods. Epoxy and Hilti bars shall be installed in accordance with the manufacturer's requirements. Detectable warning pads shall be installed per manufacturer's requirements.

MEASUREMENT

The price for this item shall be on a lump sum basis for "Concrete Observation Platform" and shall include all the work as described above, including reinforcing, drilling holes, furnishing and installing Hilti bars, epoxy.d installing pipe railing in accordance with the plans.

The "Concrete Sidewalk Ramp" shall be measured for payment by each ramp and shall include the furnishing and installing of the detectable warning pad.

PAYMENT

Payment for this work will be at the Contract Lump Sum price for "Concrete Observation Platform" and shall include all equipment, tools and labor incidental to the completion of the item. Concrete Sidewalk Ramp shall be paid for by each

ramp completed and accepted. There shall be no separate payment for the detectable warning pad but the cost shall be included in the cost per each ramp.

The furnishing and installing of granular fill for backfill of the existing foundation shall be paid for under Item #0213100. The work of furnishing and installing the galvanized pipe rail as shown on the detail shall be paid for under Item #0914000.

ITEM	**UNIT**
CONCRETE SIDEWALK RAMP	**EA.**
CONCRETE OBSERVATION PLATFORM	**L.S.**

SECTION 9.80
CONSTRUCTION STAKING

9.80.01 - GENERAL

1.01 SCOPE OF WORK

A. The City shall supply the Contractor with control points and bench marks necessary for the prosecution of the work and the Contractor will be responsible for the actual construction stakeout.

B. The Contractor shall develop and make all detail surveys necessary for construction, including slope stakes, and other working points, lines, elevations and base lines. All reference marks shall be verified by an instrument and the Contractor shall be responsible for the accuracy of all lines and grades relative to the project.

C. The Contractor shall make and submit to the Engineer all measurements necessary for determining final quantities for payment in accordance with the Special Provisions/ Standard Specifications. All such measurements shall be made in the presence of the City's representative at a mutually agreeable time.

D. All construction staking shall be performed under the supervision of a Land Surveyor licensed to do business in the State of Connecticut and acceptable to the Engineer, unless otherwise agreed upon by contractor and Engineer prior to start of work. Contractor to confirm with Engineer that proposed grade elevations and appropriate curb reveal and sidewalk cross slope are acceptable prior to installation.

E. Work included in this Section includes keeping Project Record Documents, including taking of measurements, and keeping of records of all work performed and all existing utilities and facilities encountered during the course of the work. Throughout the progress of construction, the Contractor shall keep two (2) sets of current, detailed field record drawings, to scale, indicting significant deviations of any nature made during construction and exact location of concealed work, including underground utilities encountered in the course of the work. This requirement does not authorize any deviations without approval of the Engineer. The field record information shall be marked in a legible manner on prints of the drawings furnished by the Engineer. The field information to be so marked shall include, but is not necessarily all sanitary and storm sewers, curblines, utilities, service connections, handholes, signs, sidewalks, catch basins, drop inlets and manholes.

9.80.02. - SUBMITTALS

A. Upon completion of the work, the field record information marked on prints of the drawings shall be delivered by the Contractor to the City Engineer's office. The Project Record Documents must be checked and approved by the Engineer prior to the processing of final payment.

9.80.03 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. There shall be no separate measurement or payment for Construction staking work related to this project.

PAY ITEM	PAY UNIT
CONSTRUCTION STAKING	**N/A**

END OF SECTION

SECTION 0999005A
EXISTING BUILDING REMOVAL

ITEM 0999005A – EXISTING BUILDING REMOVAL

PART 1 - GENERAL

1.01 CONTRACT DOCUMENTS

The general provisions of the CONTRACT, including General and Supplementary Conditions and General Requirements, apply to the work specified in this subsection.

1.02 DESCRIPTION

A. This item is intended to provide compensation for the removal of the existing wood framed storage building on the property of the Torrington Senior Center.

B. Demolition includes, but is not limited to, the demolition of the existing wood frame storage building. Demolition also includes removal and disposal of, trash, debris, and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated. Demolition materials and debris shall be removed from the Project Area and legally disposed of in accordance with applicable Federal, State and Local codes and regulations. The abandonment of the existing electrical service and removal of the existing utility pole will be completed by others.

C. The Contractor shall visit the site and verify the location of all pertinent items prior to submitting a bid so that the difficulties associated with execution of the contract are fully understood. No additional compensation will be allowed for failure to be so informed. No claims whatsoever shall be considered for encountering structural abnormalities, or abandoned utilities or structures.

PART 2 – PRODUCTS N/A

PART 3 - METHOD OF CONSTRUCTION

3.01 SITE VISIT

The Contractor shall visit the site and verify the location of all pertinent items prior to submitting a bid so that the difficulties associated with execution of the contract are fully understood. No additional compensation will be allowed for failure to be so informed. No claims whatsoever shall be considered for encountering structural abnormalities, or abandoned utilities or structures.

3.02 UTILITIES

A. It shall be the Contractor's responsibility to determine the actual location of all utilities. The Contractor shall promptly repair or have repaired by applicable utility company any damage incurred to utilities during construction work at no cost to City or the utility company. The Contractor shall maintain existing utilities to remain in service to adjacent buildings.

B. The Contractor shall not interrupt existing utilities serving adjacent buildings, except when authorized in writing by authorities having jurisdiction or ownership. Any temporary interruption necessary shall be directly coordinated and supervised by utility company personnel. Upon receiving such authorization, the Contractor shall provide and maintain temporary services during interruptions of existing utilities, as acceptable to utility company, governing authorities and the building owner.

3.03 PROTECTION AND SAFETY

A. Protection and safety of the surrounding community and property shall take the highest priority during demolition operations. The City of Torrington is not responsible for safety measures employed during demolition or construction. The City of Torrington has no contractual duty to control the safest methods or means of the work, job site responsibilities, supervision or to supervise safety and does not voluntarily assume any such duty or responsibility.

B. All construction operations shall be conducted so as to prevent damage to adjacent buildings, structures and other facilities and injury to persons. Special care and attention shall be taken by Contractor when working directly along the adjacent buildings. Existing building foundations are old and impacts may cause damage. Contractor shall repair or replace any damage caused by demolition or construction activities at his own expense.

C. The Contractor shall make a careful examination of the materials to be demolished and of the adjoining property and utilities which are to remain and take whatever precautions are necessary to carry on operations so as to prevent any settlement, collapse, damage or other impacts to adjacent buildings, structures, stoops, utilities and other existing features. During all operations, the Contractor is responsible for the structural integrity of these structures and surrounding structures relative to any problems or damages resulting from the performance of the Contractor's work. The Contractor shall notify the City immediately if the safety of an adjacent structure or facility is endangered or if any movement has occurred. The Contractor must provide interior and exterior shoring, bracing or support to prevent movement or settlement of the adjacent structures when safety concerns warrant. Any damage inflicted upon adjacent property, construction or utilities by the Contractor's work must be corrected promptly by the Contractor at no cost to the City. Contractor shall include in his demolition bid all costs associated with the additional time and additional precautionary measures that are needed in the areas where abutting walls. Work may include saw cutting existing pavement adjacent to walls so smaller pieces of pavements can be removed without damage to the walls.

D. All work adjacent to occupied buildings which may produce fire hazards or create nuisances or safety and health hazards from noise, vibration, gases, vapors, fumes, dust mists, or odors shall not be performed unless preventive controls or measures are implemented. Special attention is brought to adjacent building fresh air intakes, air conditioning units, etc. which need protection from dust during demolition.

3.04 OCCUPANCY AND ADJACENT PROPERTIES

The adjacent buildings shall maintain their present occupancy and function. (Any vacant units that become occupied during the project time shall be included). The Contractor shall take any and all measures necessary to protect persons associated with these properties from harm and damage during demolition activities, as well as maintaining emergency vehicle and pedestrian traffic around the demolition area. Fire, ambulance and police access shall be maintained. The Contractor shall conduct demolition operations and removal of debris in a manner that ensures the least interference with the roadway, pedestrian walkways, parking and other adjacent occupied facilities.

PART 4--METHOD OF MEASUREMENT

The contractor shall submit a lump sum bid price for the disposal of all buildings on the project.

PART 5--BASIS OF PAYMENT

Work for all building removal items shall be paid for at the contract lump sum price for "Existing Building Removal". This price shall include demolition of the existing wood frame building and/or as shown on the contract drawings or as directed by the Engineer on site. The removal of the existing electrical service and removal of utility pole will be completed by others and is not included in this item.

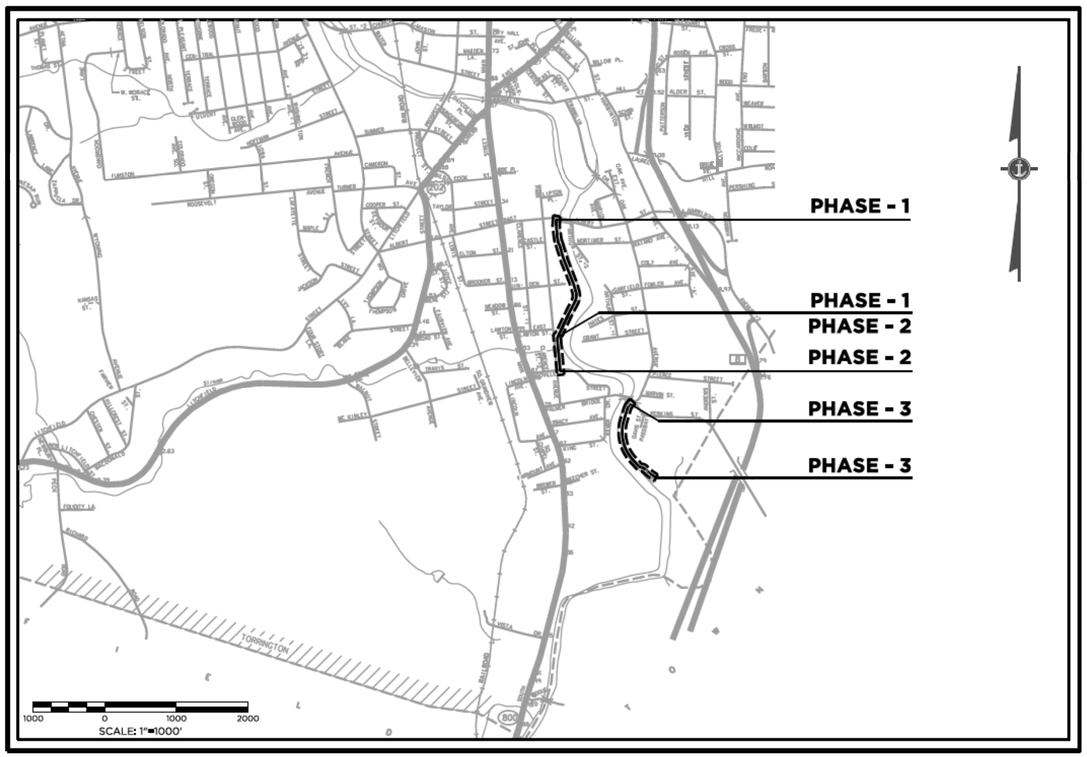
ITEM	**UNIT**
EXISTING BUILDING REMOVAL	**L.S.**

SITE DEVELOPMENT PLANS
NAUGATUCK RIVER GREENWAY - MULTI-USE TRAIL

TORRINGTON, CT

PREPARED FOR

TOWN OF TORRINGTON
140 MAIN STREET
TORRINGTON, CT 06790



LOCATION MAP
SCALE: 1" = 1000'

LIST OF SHEETS

DATE: 05/22/19
REVISED: 06/07/19

PREPARED BY:

ANCHOR
ENGINEERING SERVICES, INC.
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Fax: (860) 633-5971
www.anchorengr.com
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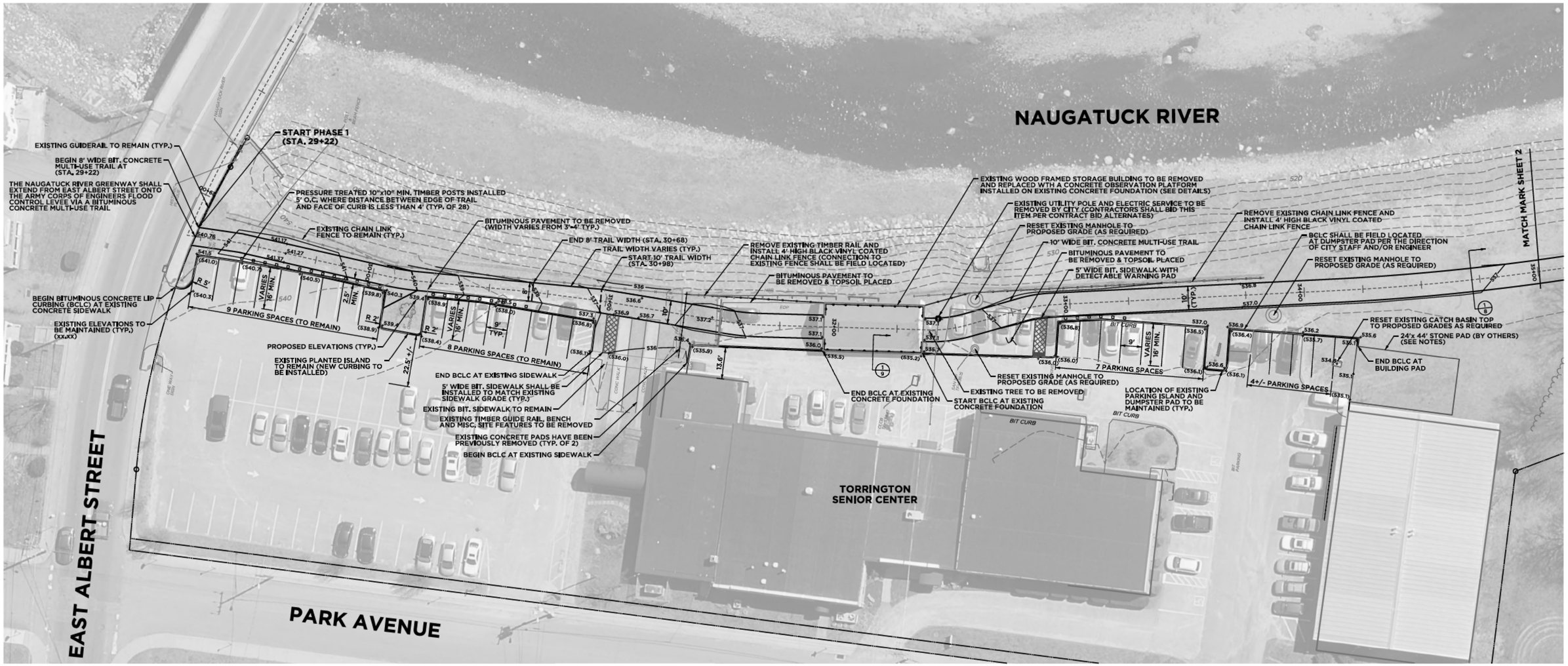
CONTRACTOR SHALL VERIFY EXISTING CONDITIONS DURING BIDDING AND ANY DISCREPANCIES SHALL BE REVIEWED WITH CITY STAFF PRIOR TO PLACING A BID

ISSUED FOR BID
Project No. 130-07



NOTES:
1. THE CITY OF TORRINGTON PLANS TO CONSTRUCT A NEW STORAGE BUILDING AT THE TORRINGTON SENIOR CENTER DURING THE SUMMER OF 2019. NAUGATUCK RIVER GREENWAY TRAIL CONTRACTOR SHALL COORDINATE HIS/HER WORK ON THE SENIOR CENTER PROPERTY TO FACILITY THE CITY'S BUILDING PLANS.
2. FINAL LIMIT OF PAVEMENT SHALL BE DETERMINED BASED UPON FINAL STORAGE LOCATION OF STORAGE BUILDING AND SHALL BE ADJUSTED AT THE CONTRACT UNIT PRICE FOR PAVEMENT (TYP.)

MAP REFERENCES:
1. DESIGN FLOOD ELEVATION AND MINIMUM LOCAL PROTECTION DERIVED FROM CORP OF ENGINEERS U.S. ARMY PLANS "HOUSATONIC RIVER FLOOD CONTROL, TORRINGTON, CONNECTICUT, LOCAL PROTECTION, TYPICAL CROSS SECTIONS, EAST BRANCH AND NAUGATUCK R, CONNECTICUT" DATED MAY, 1957.

20 0 20 40 60 80
SCALE: 1"= 20'

ISSUED FOR BID

J:\130-07\Civil\[P1-0" - Naugatuck River Greenway.dgn

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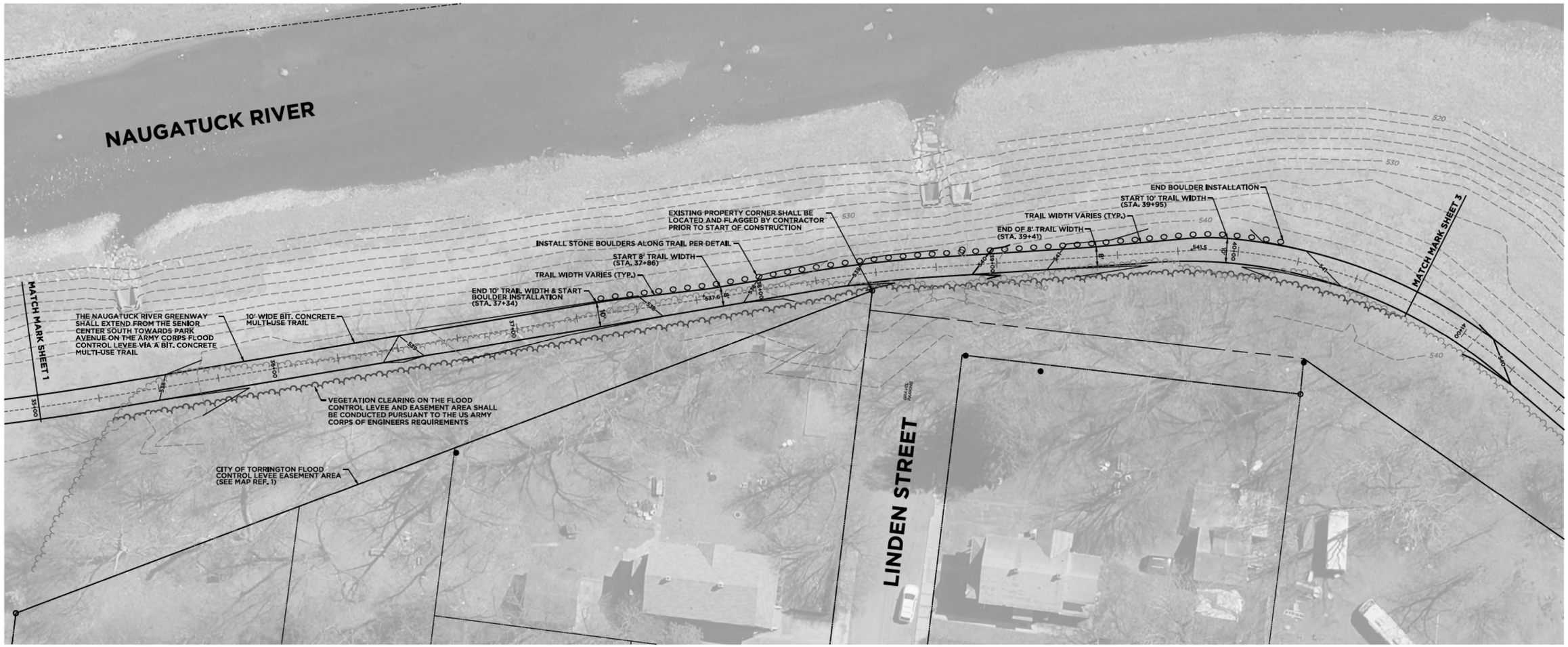
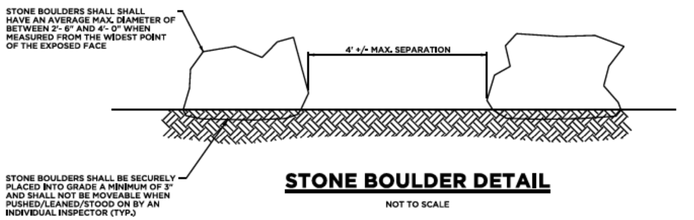
PROJ. ENGINEER	MJP
PROJ. MANAGER	KRG
OFFICE REVIEW	MLK
REVISIONS	
06/07/19	
SCALE:	1" = 20'

NAUGATUCK RIVER GREENWAY
PREPARED FOR
CITY OF TORRINGTON
MULTI-USE TRAIL (PHASE 1)
TORRINGTON, CT

PROJECT	DATE	SHEET NO.	OF
130-07	05/22/19	1	9





STONE BOULDER DETAIL

NOT TO SCALE

20 0 20 40 60 80

SCALE: 1"= 20'

ISSUED FOR BID

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OFFICE REVIEW	MLK

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06/07/19	

SCALE: 1" = 20'

NAUGATUCK RIVER GREENWAY

PREPARED FOR
CITY OF TORRINGTON

MULTI-USE TRAIL (PHASE 1)

TORRINGTON, CT

PROJECT	DATE	SHEET NO.	OF
130-07	05/22/19	2	9

MATCH MARK SHEET 2

THE NAUGATUCK RIVER GREENWAY SHALL EXTEND FROM THE SENIOR CENTER SOUTH TOWARDS PARK AVENUE ON THE ARMY CORPS FLOOD CONTROL LEVEE VIA A BIT. CONCRETE MULTI-USE TRAIL

10' WIDE BIT. CONCRETE MULTI-USE TRAIL

VEGETATION CLEARING ON THE FLOOD CONTROL LEVEE AND EASEMENT AREA SHALL BE CONDUCTED PURSUANT TO THE US ARMY CORPS OF ENGINEERS REQUIREMENTS

CITY OF TORRINGTON FLOOD CONTROL LEVEE EASEMENT AREA (SEE MAP REF. 1)

NAUGATUCK RIVER

VEGETATION CLEARING ON THE FLOOD CONTROL LEVEE AND EASEMENT AREA SHALL BE CONDUCTED PURSUANT TO THE US ARMY CORPS OF ENGINEERS REQUIREMENTS

UPON COMPLETION OF LAND CLEARING THIS AREA MAY BE UTILIZED FOR STAGING CONSTRUCTION EQUIPMENT AND MATERIALS IN SUPPORT OF THIS PROJECT

WORK NOT INCLUDED IN THE PROJECT AT THIS TIME

NAUGATUCK RIVER GREENWAY TRAIL HEAD PARKING AREA (GRAVEL)

5' WIDE TRAIL HEAD ACCESS (GRAVEL SURFACE NOT TO EXCEED 5% SLOPE)

INSTALL STONE BOULDERS ALONG TRAIL STONES SHALL BE 30" MIN. DIA. AND PLACED NO MORE THAN 6' ON CENTER (SEE DETAIL)

EXISTING PROPERTY CORNER SHALL BE LOCATED AND FLAGGED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION

42'
18' STALL
24' AISLE
90' - 10 PARKING SPACES
45' +/-

AREA MAY BE UTILIZED FOR CONSTRUCTION STAGING (TYP.)

ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED WITH TOPSOIL & SEED (TYP.)

MATCH MARK SHEET 4

24' (TYP.)

END PHASE 1
START PHASE 2
(STA. 46+73)

TRAIL HEAD PARKING ACCESS DRIVE AND CONCRETE SIDEWALK (SEE SHEET 4)

WORK NOT INCLUDED IN THE PROJECT AT THIS TIME

PARK AVENUE

20 0 20 40 60 80
SCALE: 1"= 20'

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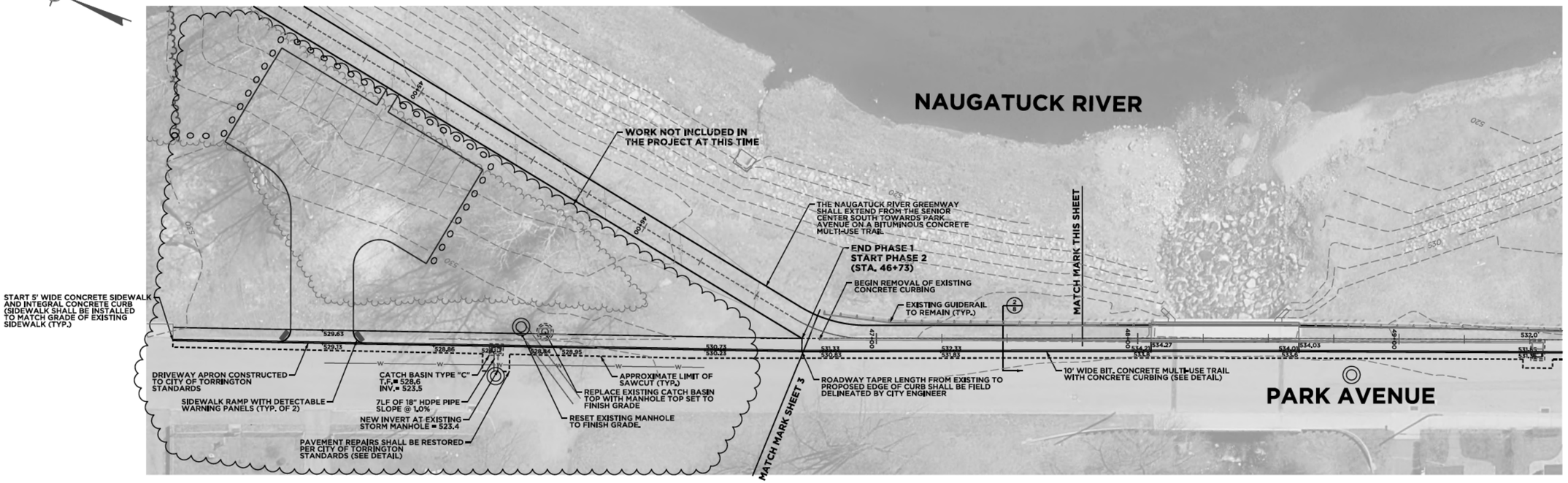
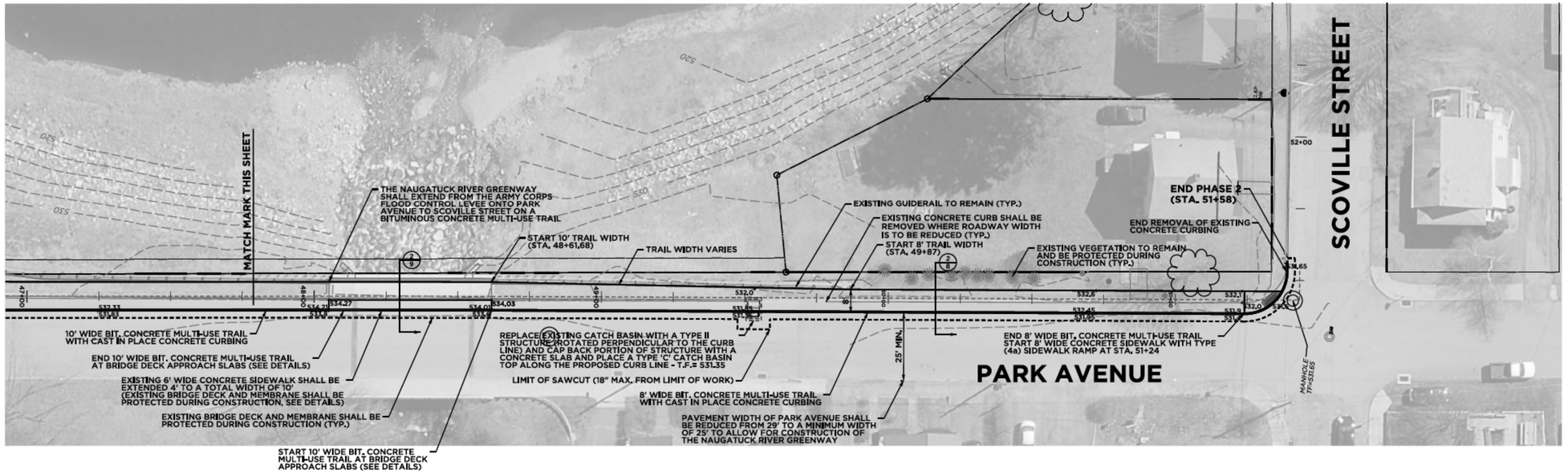
REVISIONS	
06/07/19	
SCALE:	1"=20'

NAUGATUCK RIVER GREENWAY
PREPARED FOR
CITY OF TORRINGTON
MULTI-USE TRAIL (PHASE 1)
TORRINGTON, CT

PROJECT	DATE	SHEET NO.	OF
130-07	05/22/19	3	9





SCALE: 1"= 20'

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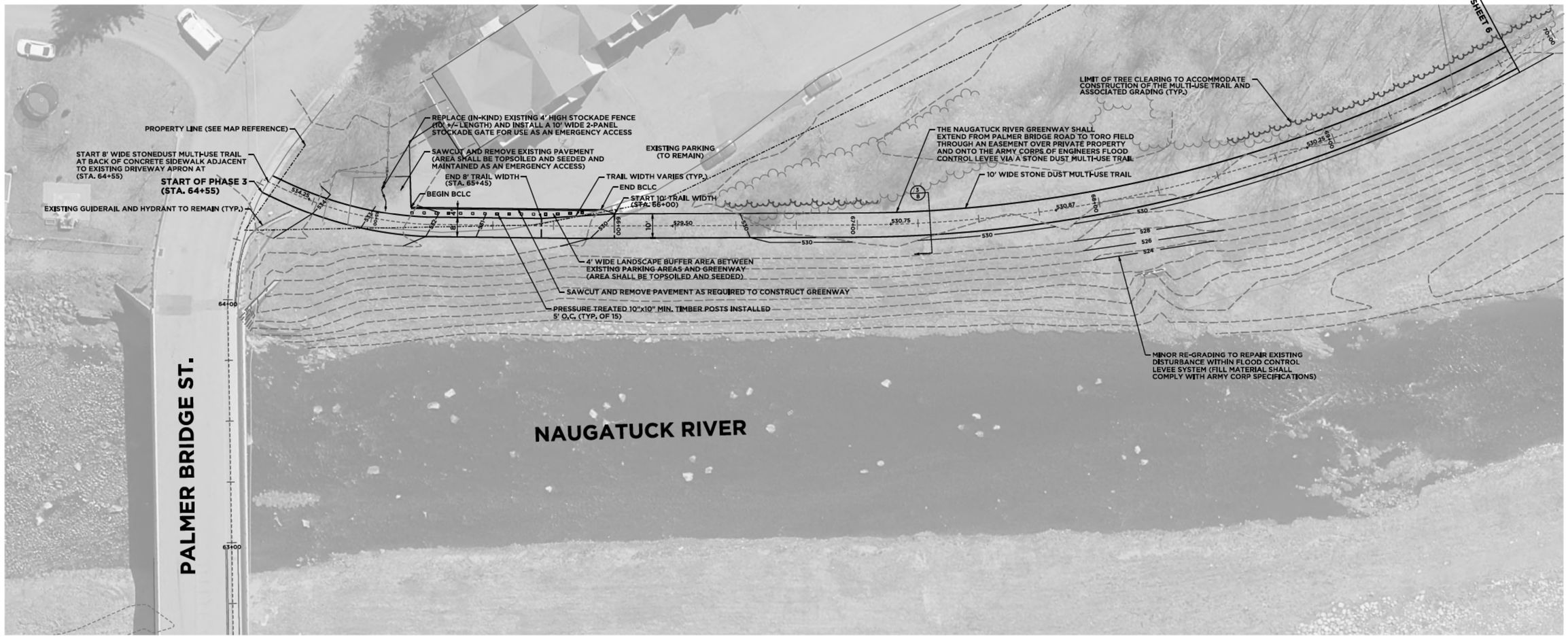
NAUGATUCK RIVER GREENWAY
PREPARED FOR
CITY OF TORRINGTON
MULTI-USE TRAIL (PHASE 2)
TORRINGTON, CT

PROJECT	DATE	SHEET NO.
130-07	05/22/19	4 OF 9

SCALE: 1"=20'



MAP REFERENCES:

1. MAP ENTITLED "BOUNDARY & TOPOGRAPHIC SURVEY, NAUGATUCK RIVER WALKWAY", PREPARED FOR THE CITY OF TORRINGTON, COUNTY OF LITCHFIELD, STATE OF CONNECTICUT; PREPARED BY TECTONIC ENGINEERING & SURVEY CONSULTANTS P.C., DATED 04/15/2015.

ISSUED FOR BID

J:\130-07\Cad\pl\01_Naugatuck River Greenway.dgn

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REVISIONS	
06/07/19	
SCALE:	1"=20'

SCALE: 1"= 20'

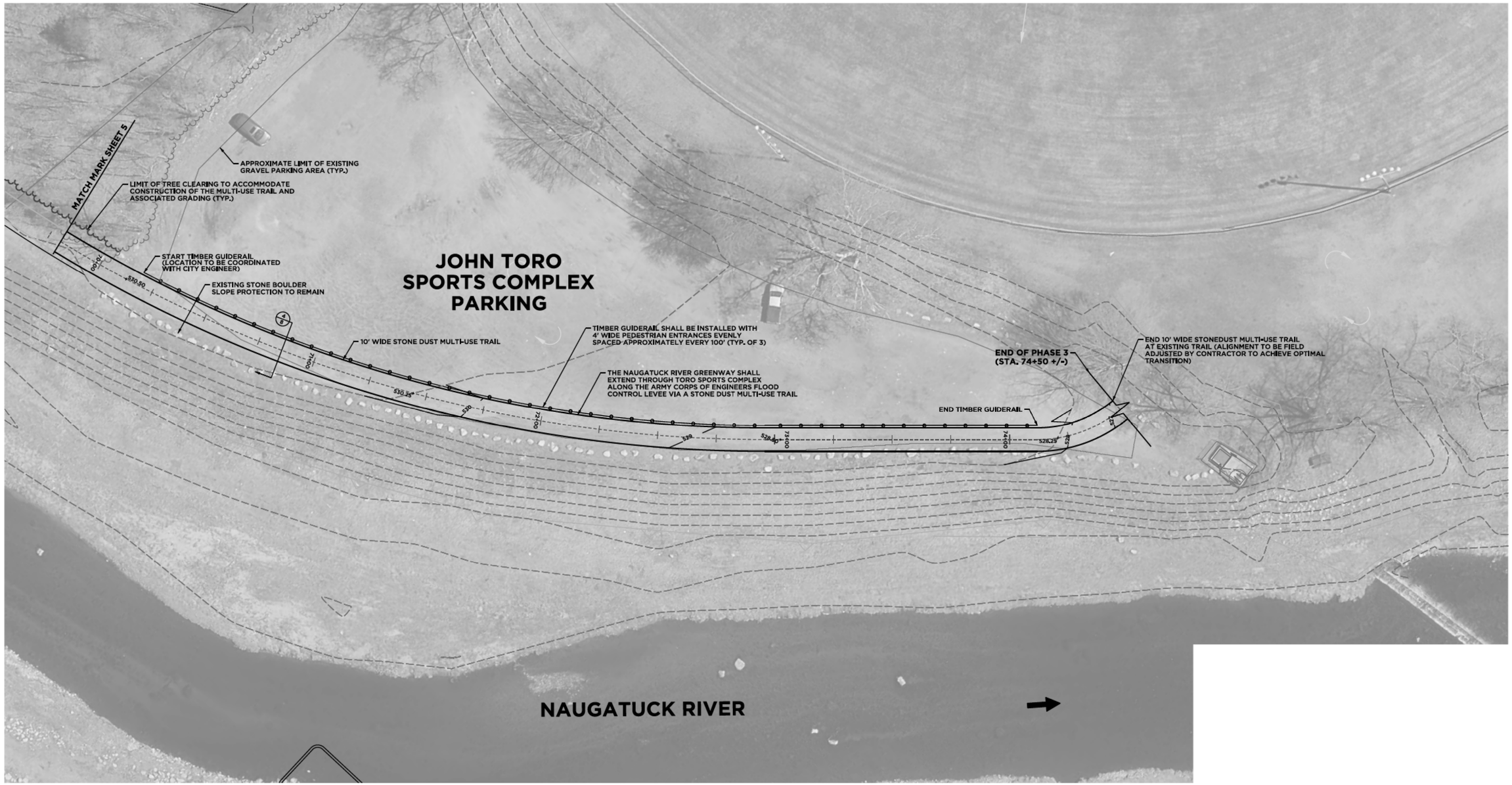
NAUGATUCK RIVER GREENWAY

PREPARED FOR
CITY OF TORRINGTON

MULTI-USE TRAIL (PHASE 3)

TORRINGTON, CT

PROJECT	DATE	SHEET NO.
130-07	05/22/19	5 OF 9



ISSUED FOR BID

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SCALE: 1"= 20'

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NAUGATUCK RIVER GREENWAY
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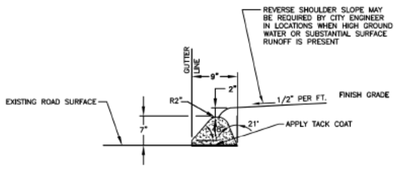
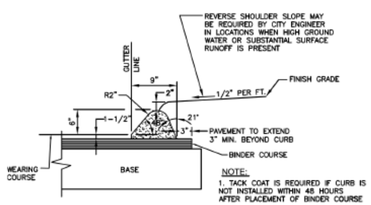
CITY OF TORRINGTON
MULTI-USE TRAIL (PHASE 3)
TORRINGTON, CT

SCALE	PROJECT	DATE	SHEET NO.
1"=20'	130-07	05/22/19	6 OF 9



REPLACEMENT FOR BITUMINOUS CONCRETE LIP CURB

NOT TO SCALE



BITUMINOUS CONCRETE LIP CURB

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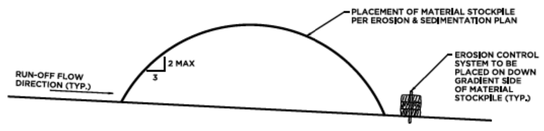
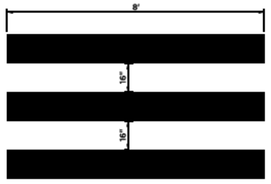


SOIL STOCKPILE DETAIL

NOT TO SCALE



CROSSWALK DETAIL

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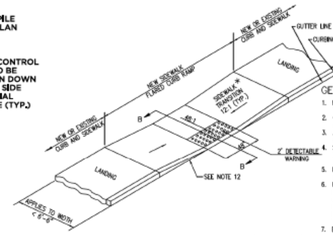
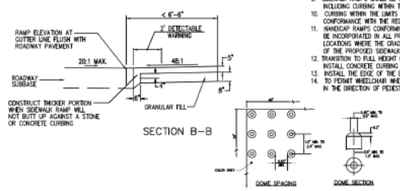


GENERAL NOTES

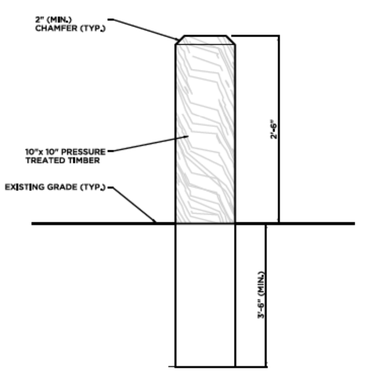
1. MAXIMUM SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE SIDEWALK RAMP OR ACCESSIBLE ROUTE SHOULD NOT EXCEED 20:1.
2. CARE SHALL BE TAKEN TO ASSURE UNIFORM GRADE ON THE RAMP, FREE OF SAGS AND ABRUPT GRADE CHANGES.
3. ALL RAMPS SHALL BE CONSTRUCTED OF CLASS "F" CONCRETE IN ACCORDANCE WITH CONNECTICUT STANDARD SPECIFICATIONS ARTICLE M.03.01.
4. SIDEWALK RAMPS SHALL HAVE A COARSE BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP. THE SURFACE ALONG ACCESSIBLE ROUTES SHALL BE STABLE, FIRM AND SLIP RESISTANT IN COMPLIANCE WITH ADAAG SECTION 4.5.
5. DIAGONAL SIDEWALK RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
6. REMOVAL OF EXISTING SIDEWALK FOR NEW RAMP INSTALLATIONS SHALL BE TO THE NEAREST EXPANSION/CONTRACTION JOINT OR DUMMY JOINT. 12:1 MAY NOT BE ACHIEVABLE DUE TO SIDEWALK GRADE. IN RECOGNITION OF THIS, A MINIMUM LIMIT OF 15' FOR A PARALLEL RAMP SHALL BE USED. REMOVAL SHALL NOT BE FURTHER THAN 2' FROM THE PROPOSED RAMP UNLESS DIRECTED BY THE ENGINEER. SAW CUT REQUIRED FOR DUMMY JOINTS SHALL BE INCLUDED IN THE COST OF "CONCRETE SIDEWALK".
7. EXPANSION JOINTS IN CONCRETE SHALL MATCH THOSE IN ADJACENT SIDEWALKS BUT IN NO CASE SHALL THE SPACING BETWEEN EXPANSION JOINTS EXCEED 12' UNLESS OTHERWISE NOTED.
8. RAISED ISLANDS IN MARKED CROSSINGS SHALL HAVE SIDEWALK RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 4' LONG BETWEEN THE RAMPS. IF THIS CAN NOT BE ACHIEVED, THE RAISED ISLAND SHALL BE CUT THROUGH LEVEL WITH THE ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
9. SIDEWALK RAMPS SHALL BE CONSTRUCTED AND PAID FOR UNDER THE ITEM "CONCRETE SIDEWALK", INCLUDING CURBING WITHIN THE LIMITS OF THE NEW SIDEWALK RAMP AND DETECTABLE WARNING STRIPS.
10. CURBING WITHIN THE LIMITS OF THE NEW SIDEWALK RAMP SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE REQUIREMENTS OF FORM 814A SECTIONS 8.11 AND 8.13.
11. HANDICAP RAMPS CONFORMING WITH CONNECTICUT GENERAL STATUTES, SEC. 7-118a, SHALL BE INCORPORATED IN ALL PROPOSED SIDEWALKS AT ALL STREET INTERSECTIONS, AND AT ALL OTHER LOCATIONS WHERE THE GRADE OF A DRIVEWAY OR OTHER FACILITY TAKES PRECEDENCE OVER THE GRADE OF THE PROPOSED SIDEWALK.
12. TRANSITION TO FULL HEIGHT CURB. INSTALL STONE CURBING IF ADJACENT CURBING IS STONE. INSTALL CONCRETE CURBING IF ADJACENT CURBING IS CONCRETE OR BITUMINOUS.
13. INSTALL THE EDGE OF THE DETECTABLE WARNING 6" FROM THE EDGE OF ROAD.
14. TO PERMIT WHEELCHAIR WHEELS TO ROLL BETWEEN DOMES, ALIGN DOMES ON A SQUARE GRID IN THE DIRECTION OF PEDESTRIAN TRAVEL.

PARALLEL SIDEWALK RAMP (TYPE 1)



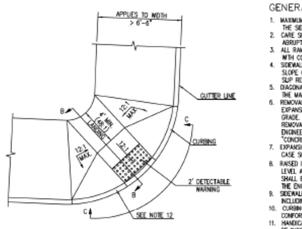
PARALLEL SIDEWALK RAMP

NOT TO SCALE



TIMBER POST

NOT TO SCALE



DIAGONAL SIDEWALK RAMP (TYPE 4a)

GENERAL NOTES

1. MAXIMUM SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE SIDEWALK RAMP OR ACCESSIBLE ROUTE SHOULD NOT EXCEED 20:1.
2. CARE SHALL BE TAKEN TO ASSURE UNIFORM GRADE ON THE RAMP, FREE OF SAGS AND ABRUPT GRADE CHANGES.
3. ALL RAMPS SHALL BE CONSTRUCTED OF CLASS "F" CONCRETE IN ACCORDANCE WITH CONNECTICUT STANDARD SPECIFICATIONS ARTICLE M.03.01.
4. SIDEWALK RAMPS SHALL HAVE A COARSE BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP. THE SURFACE ALONG ACCESSIBLE ROUTES SHALL BE STABLE, FIRM AND SLIP RESISTANT IN COMPLIANCE WITH ADAAG SECTION 4.5.
5. DIAGONAL SIDEWALK RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
6. REMOVAL OF EXISTING SIDEWALK FOR NEW RAMP INSTALLATIONS SHALL BE TO THE NEAREST EXPANSION/CONTRACTION JOINT OR DUMMY JOINT. 12:1 MAY NOT BE ACHIEVABLE DUE TO SIDEWALK GRADE. IN RECOGNITION OF THIS, A MINIMUM LIMIT OF 15' FOR A PARALLEL RAMP SHALL BE USED. REMOVAL SHALL NOT BE FURTHER THAN 2' FROM THE PROPOSED RAMP UNLESS DIRECTED BY THE ENGINEER. SAW CUT REQUIRED FOR DUMMY JOINTS SHALL BE INCLUDED IN THE COST OF "CONCRETE SIDEWALK".
7. EXPANSION JOINTS IN CONCRETE SHALL MATCH THOSE IN ADJACENT SIDEWALKS BUT IN NO CASE SHALL THE SPACING BETWEEN EXPANSION JOINTS EXCEED 12' UNLESS OTHERWISE NOTED.
8. RAISED ISLANDS IN MARKED CROSSINGS SHALL HAVE SIDEWALK RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 4' LONG BETWEEN THE RAMPS. IF THIS CAN NOT BE ACHIEVED, THE RAISED ISLAND SHALL BE CUT THROUGH LEVEL WITH THE ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
9. SIDEWALK RAMPS SHALL BE CONSTRUCTED AND PAID FOR UNDER THE ITEM "CONCRETE SIDEWALK", INCLUDING CURBING WITHIN THE LIMITS OF THE NEW SIDEWALK RAMP AND DETECTABLE WARNING STRIPS.
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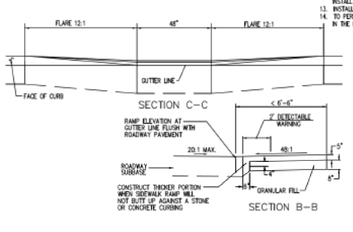
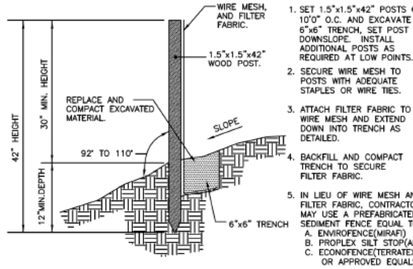
13. INSTALL THE EDGE OF THE DETECTABLE WARNING 6" FROM THE EDGE OF ROAD.
14. TO PERMIT WHEELCHAIR WHEELS TO ROLL BETWEEN DOMES, ALIGN DOMES ON A SQUARE GRID IN THE DIRECTION OF PEDESTRIAN TRAVEL.



DIAGONAL SIDEWALK RAMP TYPE (4A)

NOT TO SCALE



INSTALLATION PROCEDURE:

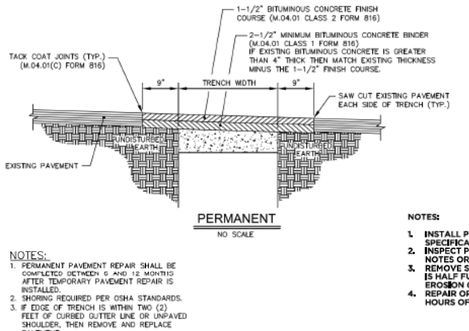
1. SET 1.5"x1.5"x42" POSTS @ 10'0" O.C. AND EXCAVATE A 6"x6" TRENCH, SET POST DOWNSLOPE. INSTALL ADDITIONAL POSTS AS REQUIRED AT LOW POINTS.
2. SECURE WIRE MESH TO POSTS WITH ADEQUATE STAPLES OR WIRE TIES.
3. ATTACH FILTER FABRIC TO WIRE MESH AND EXTEND DOWN INTO TRENCH AS DETAILED.
4. BACKFILL AND COMPACT TRENCH TO SECURE FILTER FABRIC.
5. IN LIEU OF WIRE MESH AND FILTER FABRIC, CONTRACTOR MAY USE A PREFABRICATED SEDIMENT FENCE EQUAL TO:
   A. ENVIROFENCE(MIRAFI)
   B. PROPLEX SILT STOP(AMOCO)
   C. ECOFENCE(TERRATEX)
   OR APPROVED EQUALS.

NOTE:

SEDIMENT FENCE IS TO BE CHECKED AFTER EVERY STORM EVENT AND/OR ONCE EVERY TWO WEEKS (MIN.)

CONSTRUCTION SILT FENCE

NOT TO SCALE

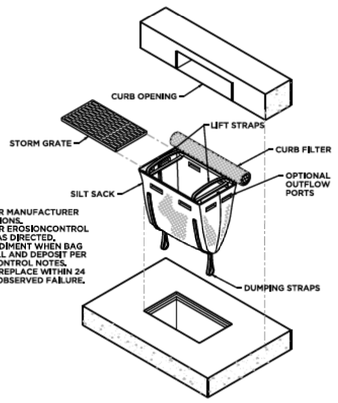


NOTES:

1. PERMANENT PAVEMENT REPAIR SHALL BE COMPLETED BETWEEN 5 AND 12 MONTHS AFTER TEMPORARY PAVEMENT REPAIR IS INSTALLED.
2. SHORING REQUIRED PER OSHA STANDARDS.
3. IF EDGE OF TRENCH IS WITHIN TWO (2) FEET OF CURBED GUTTER LINE OR UNPAVED SHOULDER, THEN REMOVE AND REPLACE PAVEMENT.

PERMANENT PAVEMENT REPAIR

NOT TO SCALE

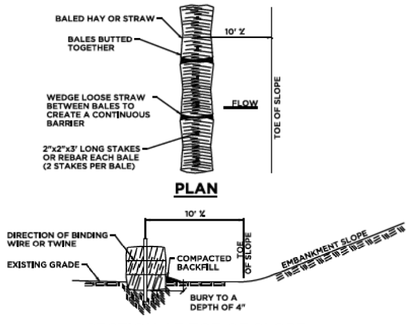


NOTES:

1. INSTALL PER MANUFACTURER SPECIFICATIONS.
2. INSPECT PER EROSIONCONTROL NOTES OR AS DIRECTED.
3. REMOVE SEDIMENT WHEN BAG IS HALF FULL AND DEPOSIT PER EROSION CONTROL NOTES.
4. REPAIR OR REPLACE WITHIN 24 HOURS OF OBSERVED FAILURE.

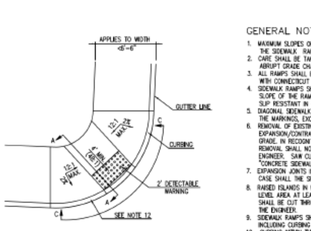
INLET SEDIMENT CONTROL DEVICE

NOT TO SCALE



PLAN

SECTION AT TOE OF SLOPE



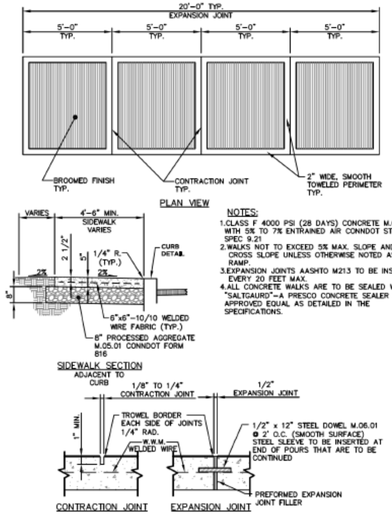
DIAGONALSIDEWALK RAMP (TYPE 4b)

GENERAL NOTES

1. MAXIMUM SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO THE SIDEWALK RAMP OR ACCESSIBLE ROUTE SHOULD NOT EXCEED 20:1.
2. CARE SHALL BE TAKEN TO ASSURE UNIFORM GRADE ON THE RAMP, FREE OF SAGS AND ABRUPT GRADE CHANGES.
3. ALL RAMPS SHALL BE CONSTRUCTED OF CLASS "F" CONCRETE IN ACCORDANCE WITH CONNECTICUT STANDARD SPECIFICATIONS ARTICLE M.03.01.
4. SIDEWALK RAMPS SHALL HAVE A COARSE BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP. THE SURFACE ALONG ACCESSIBLE ROUTES SHALL BE STABLE, FIRM AND SLIP RESISTANT IN COMPLIANCE WITH ADAAG SECTION 4.5.
5. DIAGONAL SIDEWALK RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
6. REMOVAL OF EXISTING SIDEWALK FOR NEW RAMP INSTALLATIONS SHALL BE TO THE NEAREST EXPANSION/CONTRACTION JOINT OR DUMMY JOINT. 12:1 MAY NOT BE ACHIEVABLE DUE TO SIDEWALK GRADE. IN RECOGNITION OF THIS, A MINIMUM LIMIT OF 15' FOR A PARALLEL RAMP SHALL BE USED. REMOVAL SHALL NOT BE FURTHER THAN 2' FROM THE PROPOSED RAMP UNLESS DIRECTED BY THE ENGINEER. SAW CUT REQUIRED FOR DUMMY JOINTS SHALL BE INCLUDED IN THE COST OF "CONCRETE SIDEWALK".
7. EXPANSION JOINTS IN CONCRETE SHALL MATCH THOSE IN ADJACENT SIDEWALKS BUT IN NO CASE SHALL THE SPACING BETWEEN EXPANSION JOINTS EXCEED 12' UNLESS OTHERWISE NOTED.
8. RAISED ISLANDS IN MARKED CROSSINGS SHALL HAVE SIDEWALK RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 4' LONG BETWEEN THE RAMPS. IF THIS CAN NOT BE ACHIEVED, THE RAISED ISLAND SHALL BE CUT THROUGH LEVEL WITH THE ROADWAY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
9. SIDEWALK RAMPS SHALL BE CONSTRUCTED AND PAID FOR UNDER THE ITEM "CONCRETE SIDEWALK", INCLUDING CURBING WITHIN THE LIMITS OF THE NEW SIDEWALK RAMP AND DETECTABLE WARNING STRIPS.
10. CURBING WITHIN THE LIMITS OF THE NEW SIDEWALK RAMP SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE REQUIREMENTS OF FORM 814A SECTIONS 8.11 AND 8.13.
11. HANDICAP RAMPS CONFORMING WITH CONNECTICUT GENERAL STATUTES, SEC. 7-118a, SHALL BE INCORPORATED IN ALL PROPOSED SIDEWALKS AT ALL STREET INTERSECTIONS, AND AT ALL OTHER LOCATIONS WHERE THE GRADE OF A DRIVEWAY OR OTHER FACILITY TAKES PRECEDENCE OVER THE GRADE OF THE PROPOSED SIDEWALK.
12. TRANSITION TO FULL HEIGHT CURB. INSTALL STONE CURBING IF ADJACENT CURBING IS STONE. INSTALL CONCRETE CURBING IF ADJACENT CURBING IS CONCRETE OR BITUMINOUS.
13. INSTALL THE EDGE OF THE DETECTABLE WARNING 6" FROM THE EDGE OF ROAD.
14. TO PERMIT WHEELCHAIR WHEELS TO ROLL BETWEEN DOMES, ALIGN DOMES ON A SQUARE GRID IN THE DIRECTION OF PEDESTRIAN TRAVEL.

DIAGONAL SIDEWALK RAMP TYPE (4B)

NOT TO SCALE

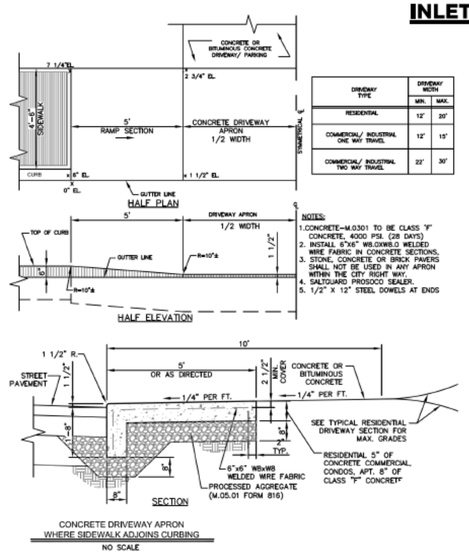


NOTES:

1. CLASS F 4000 PSI (28 DAYS) CONCRETE M.03.01 WITH 5% TO 7% ENTRAINED AIR CONNDOT STD. SPEC. 9.21
2. WALKS NOT TO EXCEED 5% MAX. SLOPE AND 2% CROSS SLOPE UNLESS OTHERWISE NOTED AS RAMP.
3. EXPANSION JOINTS AASHTO M213 TO BE INSTALLED EVERY 20 FEET MAX.
4. ALL CONCRETE WALKS ARE TO BE SEALED WITH "SALTGUARD"–A PRESCO CONCRETE SEALER OR APPROVED EQUAL AS DETAILED IN THE SPECIFICATIONS.

CONCRETE SIDEWALK

NOT TO SCALE

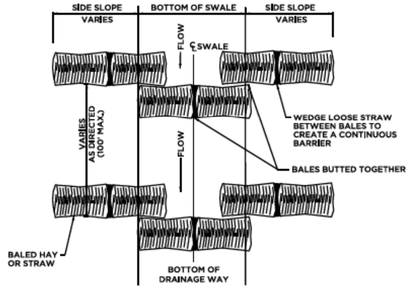


NOTES:

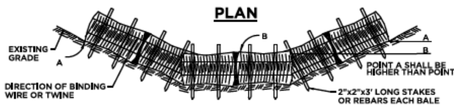
1. CONCRETE–M.0301 TO BE CLASS "F" CONCRETE, 4000 PSI. (28 DAYS)
2. INSTALL 6"X6" W8.0XW8.0 WELDED WIRE FABRIC IN CONCRETE SECTIONS.
3. STONE, CONCRETE OR BRICK PAVERS SHALL NOT BE USED IN ANY APRON WITHIN THE CITY RIGHT WAY.
4. SALTGUARD PROSOCO SEALER.
5. 1/2" X 12" STEEL DOWELS AT ENDS

CONCRETE APRON WITH SIDEWALK ADJOINING CURB

NOT TO SCALE



PLAN



SECTION AT SWALE

HAY BALES

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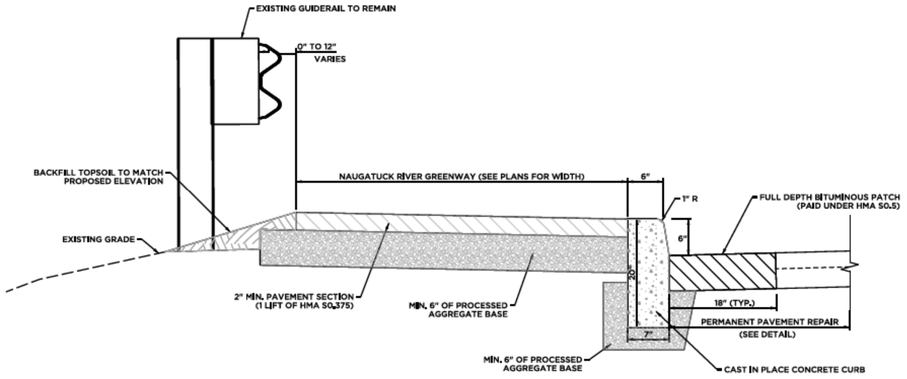
PROJ. MANAGER	KRG
OFFICE REVIEW	MLK
REVISIONS	
06/07/19	

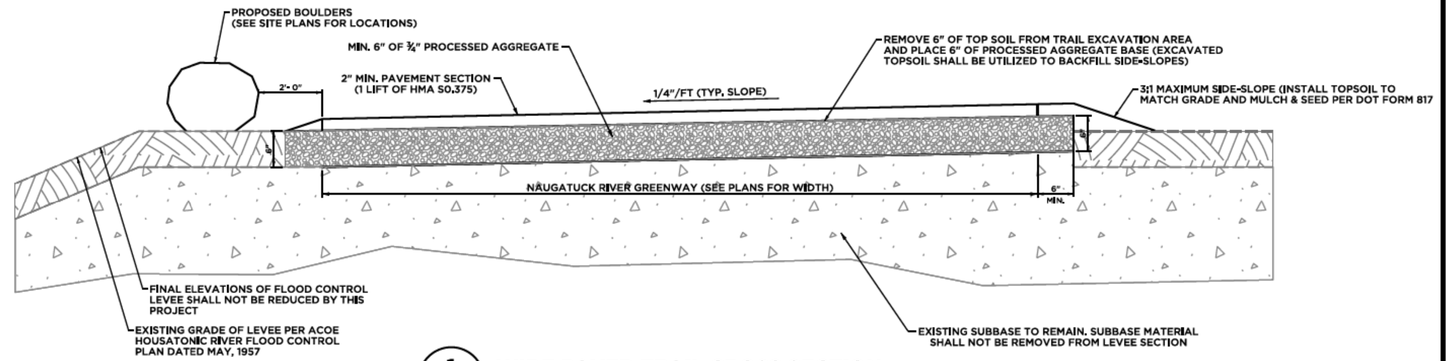
NAUGATUCK RIVER GREENWAY
PREPARED FOR
CITY OF TORRINGTON
SITE DEVELOPMENT DETAILS
TORRINGTON, CT

SCALE:	PROJECT	DATE	SHEET NO.
NOT TO SCALE	130-07	05/22/19	7 OF 9



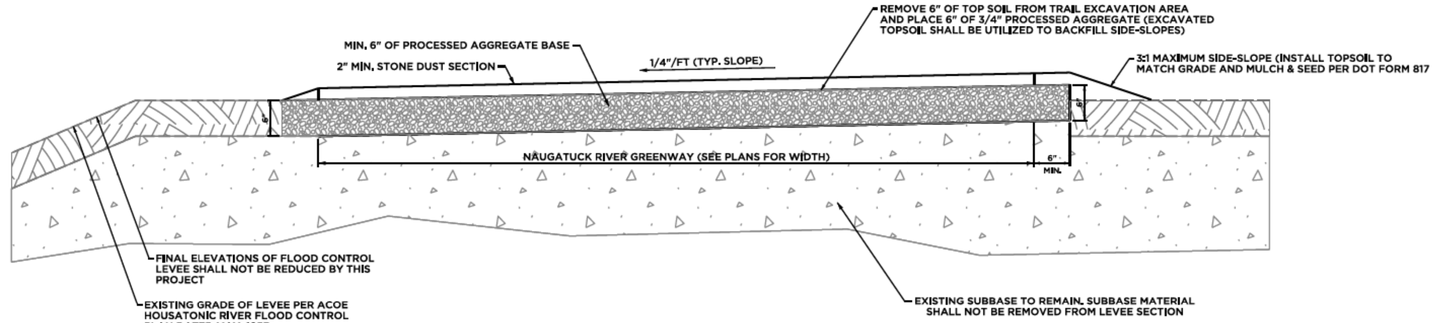
2/8 SIDEWALK SECTION

NOT TO SCALE



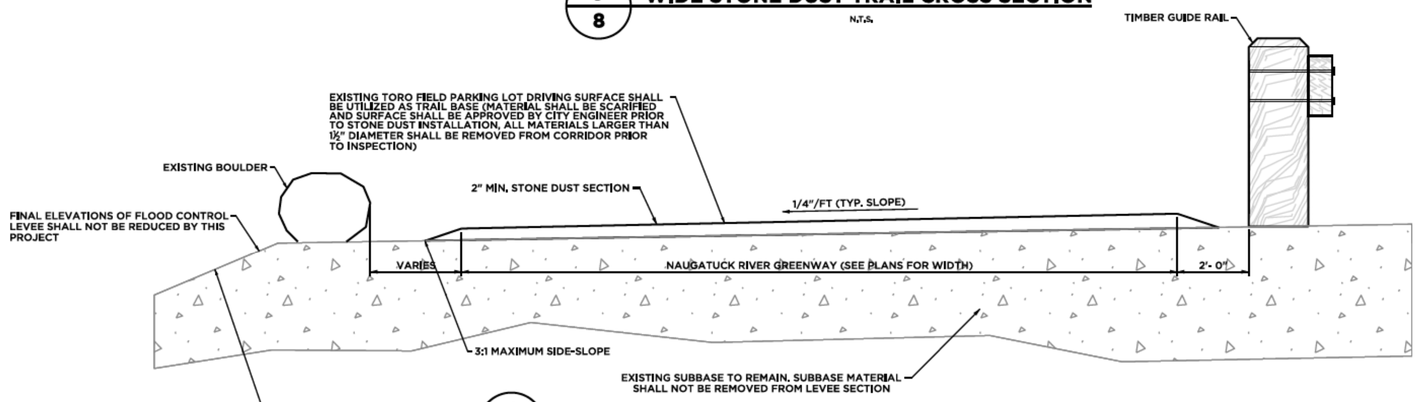
1/8 WIDE PAVED TRAIL CROSS SECTION

N.T.S.



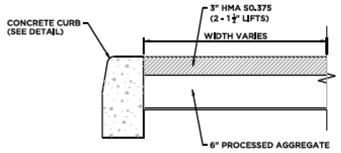
3/8 WIDE STONE DUST TRAIL CROSS SECTION

N.T.S.



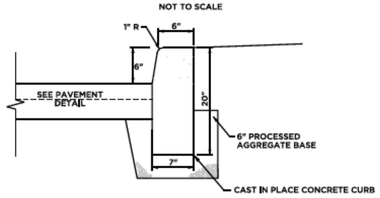
4/8 STONE DUST TRAIL CROSS SECTION (TORO FIELD)

N.T.S.



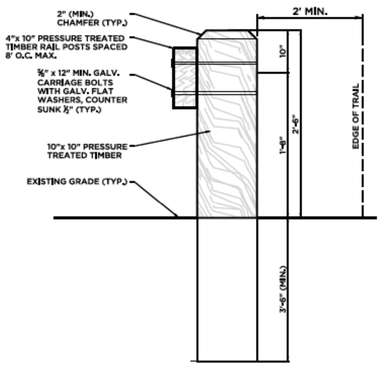
BITUMINOUS CONCRETE SIDEWALK

NOT TO SCALE



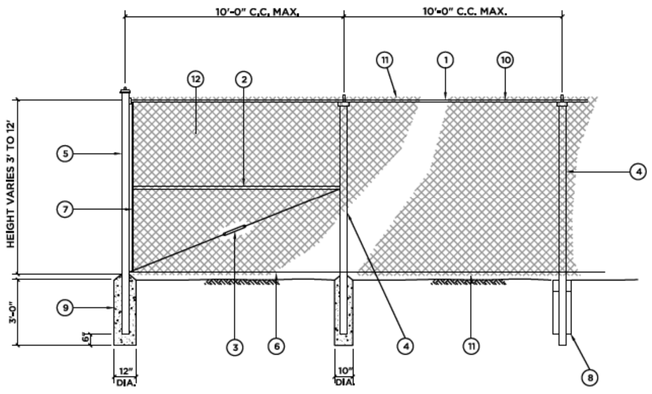
POURED IN PLACE CONCRETE CURB

NOT TO SCALE



TIMBER GUIDE RAIL

NOT TO SCALE



CHAIN LINK FENCE

NOT TO SCALE

NOTES:

1. 1 5/8" O.D. TOP RAIL ATTACH TO THE C.L. FABRIC WITH 9 GAUGE WIRE CLIP EVERY 24"
2. 1 5/8" O.D. BRACE RAIL FENCES OVER 6 FEET FEET HIGH AND ALL FENCES WITHOUT TOP RAIL
3. 5/16" TRUSS ROD AND TURNBUCKLE
4. INTERMEDIATE POST

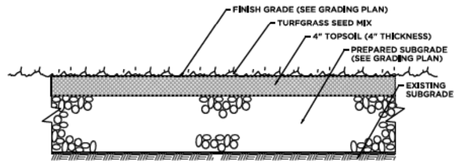
FENCE HEIGHT	SQUARE POST	ROUND POST
6 FEET AND LESS	1 7/8"	2"
OVER 6 FEET	2 1/4"	2 1/2"

ATTACH TO C.L. FABRIC WITH CLIPS EVERY 15"

5. END OR CORNER POST

FENCE HEIGHT	SQUARE POST	ROUND POST
6 FEET AND LESS	2"	2 1/2"
OVER 6 FEET	2 1/2"	3"

6. 6 GAUGE BOTTOM TENSION WIRE ATTACH TO C.L. FABRIC WITH HOG RING AT 24" C.C.
7. TENSION ROD ATTACHED TO END OR CORNER POST
8. 2-30" MIN. LENGTH DRIVE ANCHORS DRIVEN THROUGH FITTINGS AT 90° TO FENCE LINE INTO EARTH AT 45° (TO BE USED IN PLACE OF CONCRETE FOOTING. SEE FOOTING DESIGN NOTE.)
9. CONCRETE FOOTING 36" DEEP WITH 12" DIA. AT END POST AND 10" DIA. AT INTERMEDIATE POST. HOLE CORE IN UNDISTURBED OR COMPACTED SOIL. (SEE FOOTING DESIGN NOTE)
10. 6 GAUGE TENSION WIRE WHEN TOP RAIL IS NOT USED.
11. FABRIC SELVAGE
UNDER 6 FEET SHALL BE KNUCKLED TOP AND BOTTOM
6 FEET AND OVER SHALL BE KNUCKLED BOTTOM AND TWISTED ON THE TOP
RECREATIONAL FENCING, REGARDLESS OF HEIGHT, SHALL BE KNUCKLED TOP AND BOTTOM
12. 11 GAUGE 2" WIRE MESH FABRIC (RESIDENTIAL)
9 GAUGE 1 3/4" WIRE MESH FABRIC (RESIDENTIAL)
9 GAUGE 2" WIRE MESH FABRIC (COMMERCIAL)
OTHER GAUGE AND MESH SIZES AVAILABLE
VINYL COATED MESH TO BE USED WHERE SHOWN ON PLANS



TURF ESTABLISHMENT

NOT TO SCALE

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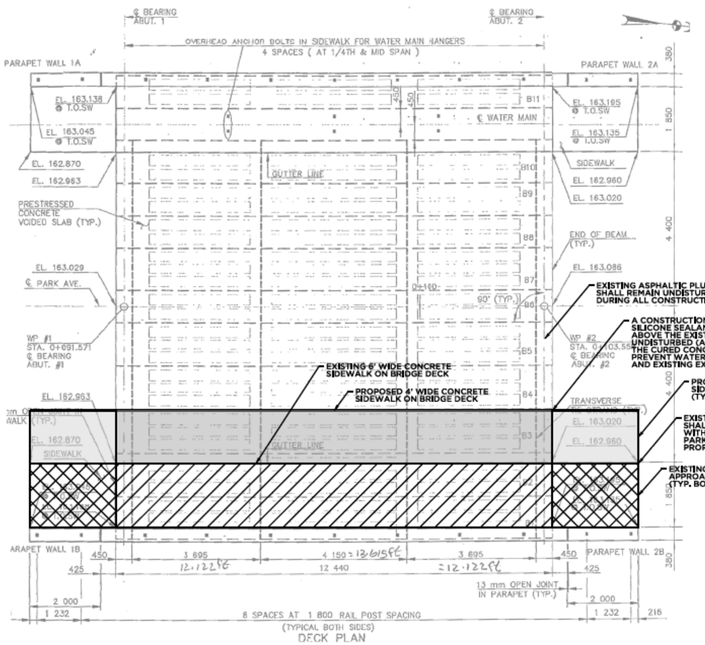
REVISIONS

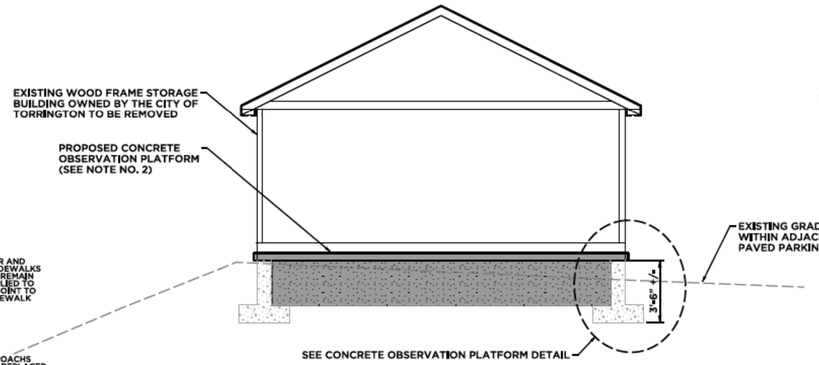
06/07/19	

NAUGATUCK RIVER GREENWAY
PREPARED FOR
CITY OF TORRINGTON
SITE DEVELOPMENT DETAILS
TORRINGTON, CT

SCALE:	PROJECT	DATE	SHEET NO.	OF
NOT TO SCALE	130-07	05/20/19	8	9



DECK PLAN

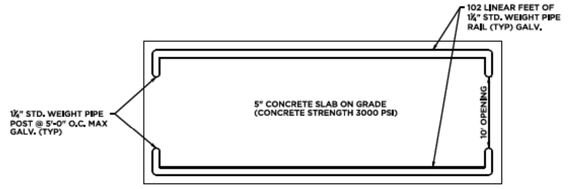


NOTE:

1. NO DISTURBANCE TO THE EXISTING LEVEE SYSTEM WILL OCCUR AS PART OF THE BUILDING REMOVAL OR OBSERVATION DECK CONSTRUCTION.
2. PROPOSED CONCRETE OBSERVATION PLATFORM INSTALLED ON EXISTING FOUNDATION TO BE USED BY THE CITY OF TORRINGTON AS A VIEWING PLATFORM AND REST AREA OVERLOOKING THE NAUGATUCK RIVER. ALL DESIGNS FOR THE REQUIRED PEDESTRIAN RAILS SHALL BE DESIGNED TO CURRENT BUILDING CODE.

1/9 EXISTING STORAGE BUILDING & OBSERVATION PLATFORM DETAIL

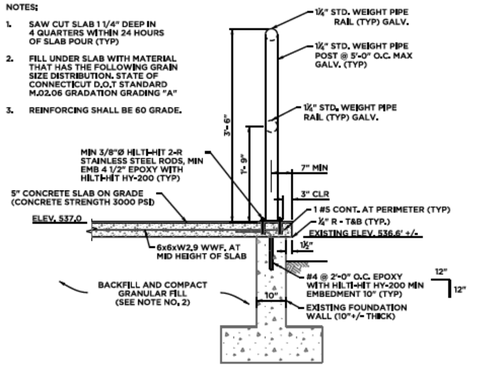
NOT TO SCALE



RAILING PLAN VIEW

NOTES:

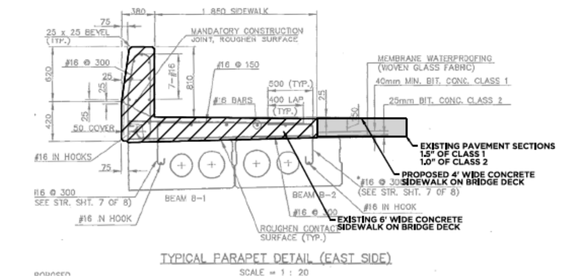
1. SAW CUT SLAB 1 1/4" DEEP IN 4 QUARTERS WITHIN 24 HOURS OF SLAB POUR (TYP)
2. FILL UNDER SLAB WITH MATERIAL THAT HAS THE FOLLOWING GRAIN SIZE DISTRIBUTION. STATE OF CONNECTICUT D.O.T STANDARD M.02.06 GRADATION GRADING "A"
3. REINFORCING SHALL BE 60 GRADE.



SECTION VIEW

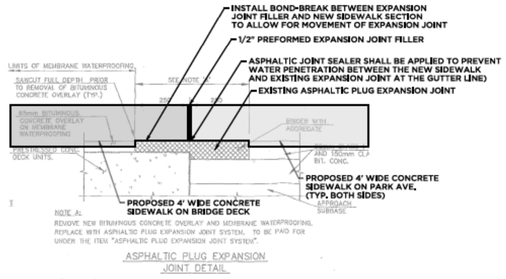
CONCRETE OBSERVATION PLATFORM DETAIL

NOT TO SCALE

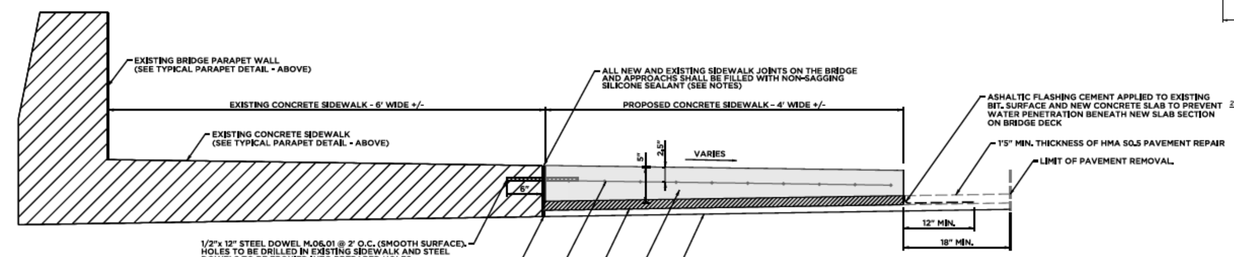


TYPICAL PARAPET DETAIL (EAST SIDE)

SCALE = 1 : 20



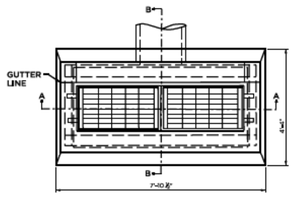
ASPHALTIC PLUG EXPANSION JOINT DETAIL



NOTES:

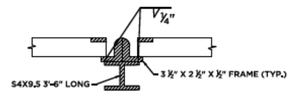
1. NON-SAGGING SILICONE SEALANT SHALL BE PLACED ON APPROPRIATELY SIZED BACKER ROD OR PREFORMED EXPANSION JOINT FILLERS PER MANUFACTURER'S RECOMMENDATION.
2. PRIOR TO INSTALLING SILICONE SEALANTS THE EXISTING JOINTS SHALL BE CELANED OF ALL FOREIGN MATERIALS BY SAND BLASTING OR OTHER METHODS APPROVED BY ENGINEER.
3. WHERE RADIUS' AND/OR BEVELED EDGES OCCUR THE EXISTING EDGE TREATMENT SHALL BE GROUND SMOOTH AND FILLED WITH SILICONE SEALANT.

2/9 CONCRETE SIDEWALK EXTENSION DETAIL

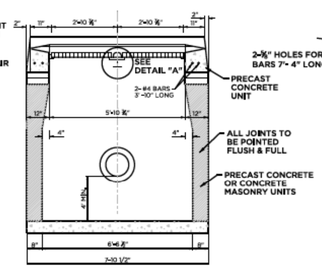


PLAN

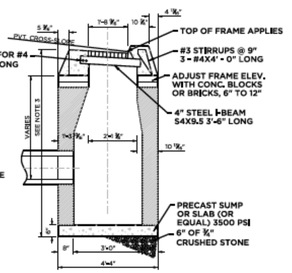
NOTES:
1. MINIMUM COVER OVER TOP OF PIPE SHALL BE 2'-0".
2. WALL THICKNESS SHALL BE SUFFICIENT TO MEET HS 20 LOADING.
3. WALL THICKNESS FOR STRUCTURES OVER 10' HIGH IS 12" FOR CONCRETE BLOCK UNITS. INSIDE DIMENSIONS REMAIN THE SAME.
4. ALL PIPES SHALL BE CUT FLUSH WITH INSIDE WALLS.
5. ALL BRICKS SHALL BE CONCRETE.
6. FOUR FOOT SUMPS SHALL BE PROVIDED IN ALL CATCH BASINS.
7. USE C-L GRATE FOR A TYPE C-L DOUBLE GRATE BASIN.



DETAIL "A"



SECTION A-A

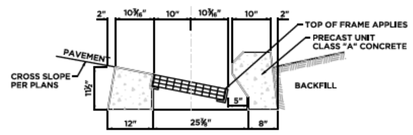


SECTION B-B

TYPE "C" CATCH BASIN DOUBLE GRATE TYPE II

NOT TO SCALE

* SEE PLANS, NOTES AND SPECIAL PROVISIONS FOR INSTALLATION & ALIGNMENT OF SPECIAL TYPE II CATCH BASIN STRUCTURE



SECTION

TYPE "C" CATCH BASIN TOP

NOT TO SCALE

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CITY OF TORRINGTON
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TORRINGTON, CT

PROJECT	DATE	SHEET NO.	OF
130-07	05/22/19	9	9

SCALE: 1"=40'